THE GAS JOURNAL

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A Glance at the Contents—

A Supplement.

With this issue of the "JOURNAL," which contains a report of the Annual Meeting of the N.G.C., we present the first of a series of "Gas Lights," by Fred May. A letter in this connection will reach subscribers within a day or two.

London Juniors.

A report of the annual business meeting of the London and Southern District Junior Gas Association is published on p. 392.

Ammonia and Benzole Recovery.

An account is given of an investigation carried out at a coke oven installation on ammonia and benzole recovery in Feld washers. [p. 378.]

Midland Association.

The Spring Meeting of the Midland Association of Gas Engineers and Managers, held in Birmingham last week, was attended with great success. [p. 396.]

Gas on the District.

At a meeting of the Midland Junior Gas Association, Mr. S. W. Simmons, of Dudley, read a paper on "Gas and its Possibilities on the District." He refers particularly to the importance of the lighting load. [p. 397.]

Coal Assays.

Mr. Harald Nielsen describes his modification of the Fischer apparatus for coal assays. This modification "combines the simplicity and general reliability of the Fischer apparatus with absolute certainty of results when dealing with a swelling coal." [p. 386.]

Engineer and Manager Required.

The Directors of the Sittingbourne District Gas Company invite applications for this position. [p. 405.]

Complete Gasification.

In our correspondence columns to-day Mr. L. H. Sensicle has several interesting comments on the paper "400 B.Th.U.'s?" by Mr. R. H. Duxbury at the meeting of the North of England Gas Managers' Association. [p. 374.]

The Gas Engine.

The advantages to be derived from the use of modern gas engines are set forth in a paper read by Mr. A. J. Cruise, of the Cardiff Gas Light and Coke Company, before the Graduate Section of the Institution of Chemical Engineers. [p. 384.]

Presidential Address of Mr. B. F. Harris.

Data on the results obtained from installing a "Dri-Gas" and naphthalene washing plant at the Trowbridge Works of the British Gas Light Company are given by Mr. B. F. Harris in his Presidential Address to the Western Junior Gas Association. [p. 395.]

New Showrooms at Oxted.

Following closely upon the very fine gas exhibition which the Croydon Gas Company held recently in their newly acquired district of Oxted (referred to at the time in the "JOURNAL"), they have now opened attractive and commodious new showrooms, stores, and workshops in a prominent position on the main thoroughfare of the town. [p. 382.]

Forthcoming Engagements

May 26.—SOCIETY OF BRITISH GAS INDUSTRIES.—Meeting of Council in the morning, 56, Victoria Street, S.W. 1.

May 26.—SOCIETY OF BRITISH GAS INDUSTRIES.—General Meeting in London.

May 26.—WALES AND MONMOUTHSHIRE ASSOCIATION.—Meeting at Swansea.

June 6.—INSTITUTION OF GAS ENGINEERS.—Meetings of Finance Sub-Committee, 2 p.m.; Finance Committee, 2.30 p.m.; Executive Committee, 3 p.m.; Council, 4 p.m.; 28, Grosvenor Gardens, S.W. 1.

June 7-9.—INSTITUTION OF GAS ENGINEERS.—General Meeting in London.

June 14.—INSTITUTION OF GAS ENGINEERS.—Meeting of Joint Lighting Committee, 2.15 p.m., 28, Grosvenor Gardens, S.W. 1.

June 14.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 28, Grosvenor Gardens, S.W. 1.

June 18.—NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION (AUXILIARY SECTION).—Meeting at the works of the Washington Chemical Company, Ltd.

June 23.—B.C.G.A.—Meeting of General Committee, 28, Grosvenor Gardens, S.W. 1, 2.30 p.m.

June 24.—B.C.G.A.—South-Western District Conference, Dartmouth.

June 24.—WAVERLEY ASSOCIATION OF GAS MANAGERS.—Annual Meeting in Edinburgh.

June 29.—B.C.G.A.—Lancashire District Conference, Stockport.

Sept. 8.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting in Ayr.

EDITORIAL NOTES

A More Hopeful Situation

PRESIDING last week at the annual meeting of the National Gas Council, Sir David Milne-Watson was in a position to report that the general situation to-day is more hopeful than it was some months ago; and he expressed the belief that if, in conjunction with the policy now being pursued by the Government, further retrenchment in public expenditure is effected, we may hope for a gradual recovery of trade and industry. This is a line which we were specially glad to see Sir David take. Go where one will, the need of a more hopeful feeling with regard to prospects is evident, and therefore anything calculated to foster it is to be welcomed. It may have been that the beneficent influence of the President's views had something to do with the spirit of harmony which pervaded the meeting. Probably it was so; though there were other good reasons as well. We have steadfastly refused to regard the Gas Industry as one of the depressed industries of the country, and this attitude receives justification from Sir David's remark that it is estimated that the sales of gas for the twelve months up to December last will be for all practical purposes the same as in the preceding year.

We must be ready to take the fullest possible advantage of every break in the clouds, by maintaining everything at the highest pitch of efficiency, but, as the President tells us, we must do more than this: "We must seek out and create new markets for the sale of gas and our other products. There is still a large field for the Industry to occupy. This is particularly true of the industrial sphere, and it is therefore with great satisfaction that I am able to report to you that considerable progress has been made in setting up Industrial Centres in various parts of the country for the purpose of promoting and encouraging large scale supply of gas for commercial and industrial purposes." Careful heed must be paid by every member of the Council to Sir David's remark regarding the importance of taking full advantage of the arrangements which are being made by these Industrial Centres.

Large uses for gas are being constantly developed, and many others remain to be developed. Any difficulties that may be caused by legislative restrictions must be regarded only as incentives for still greater effort. They must be removed in time, and it would be a disaster if, in even a single direction, the Industry had to exclaim that the relief had come "too late." In connection with large uses for gas in novel directions, free interchange of opinion is most desirable, and we are always anxious to do our share in providing readers with full information. A very recent instance of these special uses is to be found in the Presidential Address of Mr. P. D. Walmsley, of Yarmouth, to the Eastern Counties Gas Managers' Association, which was reproduced in the "JOURNAL" dated May 4. Mr. Walmsley has built up for himself a load which affords a valuable illustration of what can be accomplished in this way.

Good Showing of Gas Stocks

ANOTHER particularly pleasing portion of Sir David Milne-Watson's address was that in which he pointed out to the members of the National Gas Council the increasing confidence and interest felt and taken in our Industry by the general public. "The reputation of Gas Stocks as a safe investment," he said, "was never higher. Even during the most critical period of the year fluctuations in value were trivial compared with those of other industries, and, in consequence, those undertakings which have sought fresh capital have been able to obtain it on reasonable terms. This is due, I think, to the sound policy which we have always pursued of conserving our financial resources—a policy which is serving us well in the present period of stress." Special attention is devoted in the "JOURNAL" to the Stock and Share side of the Industry, and, always valuable, we regard this feature as being of added usefulness at a time when things financial are so disturbed. How many people there must be who would now be better off than they are, had more of their money been invested in gas! All through the monetary crisis the steadiness of Gas Stocks has been outstanding, and the "JOURNAL" weekly record makes it possible for readers to fully appreciate this fact. It is a "talking point," of which one feels that more might very well be made. It is one of the big things; one of the things that really matter. But the Gas Industry is so modest!

As Sir David said, public confidence is increasing, but there remains ample room for further education of the people as to the real standing of gas. Stocks and Shares in the Gas Industry are held by people who know; both oral and written evidence proves conclusively that there are still far too many people who do not know.

Some Recent Capital Issues

WHILE referring to the growing confidence in Gas Stocks as indicated by the Table of Prices published weekly in the "JOURNAL," attention may be drawn to the further proof of the same fact that is to be found in the excellent response to new capital issues. There is a very natural desire in progressive quarters to be prepared for the brighter days ahead, and this spells capital expenditure. The time now seems to be propitious for obtaining money on unquestionable security, and again our pages show the extent to which the Industry is taking advantage of the opportunity.

A rapid glance over the "JOURNAL" numbers for last year and this, has brought to light the following information. It is not claimed that these particulars are complete, or that they tell the full story, but they may at least be accepted as a pointer:

1931.	£		P.Ct.
Oxford	51,000	perp. deb.	5
Portsmouth	80,000	ord. con.	4
Preston	93,000	pref.	5
Great Yarmouth	14,590	perp. deb.	5½
Plymouth and Stonehouse	70,000	" "	5
Bognor	30,000	red. deb.	5½
Bedford	20,000	perp. deb.	5
Uxbridge	51,557	" "	5
"	33,575	ord.	
Barnet	35,000	"	
Redditch	15,000	red. deb.	5½
"	10,000	ord.	5
Barnstaple	5,000	"B" shares	7
Swindon	45,000	pref.	5½
Gosport	15,000	pref. & ord.	
Bromsgrove	14,000	ord. "B"	7
Haslemere	7,000	red. pref.	6
Littlehampton	11,000	"B" ord.	
Dudley	45,000	red. deb.	5
Littlehampton	28,700	" "	5½
Godalming	5,000	deb.	6
Total, 1931	£679,422		

1932.	£		P.Ct.
East Surrey	20,000	pref. "A"	5½
Tunbridge Wells	30,000	perp. deb.	5½
Plymouth and Stonehouse	75,000	ord.	
Slough	12,000	perp. deb.	5
"	18,750	ord.	5
Watford	100,000	pref.	5½
Chichester	7,500	perp. deb.	5
Dover	17,500	new	7½
Newcastle-upon-Tyne	76,000	red. deb.	5
" " "	85,000	perp. deb.	5
Southampton	50,000	red. deb.	5
"	25,000	irred. pref.	5½
Lowestoft	60,000	perp. deb.	5
Swansea	350,000	red. pref.	5½
Mid-Southern	100,000	con. pref.	4
Wandsworth	125,000	pref.	5
Bognor	25,000	red. deb.	5½
Total to April, 1932	£1,176,750		

This year has, it will be seen, been a far more active one so far than 1931, and it may well be doubted whether

a more suitable opportunity than the present will offer itself for securing capital or carrying out works that will be needed when more prosperous times arrive. The sums set forth above must represent a good deal of work, though, of course, some of it may have been already carried out.

That Abused Word Economy

THE position of the Gas Industry in this time of stress can hardly be considered without regard to the muddled state of public opinion on the important subject of economy. When high authorities on finance seem able to offer so little by way of understandable explanation of unprecedented currency movements, it is only to be expected that more ordinary mortals should find themselves " at sea." There is no doubt that the blessed word " economy " is too often sadly abused. It can have so many interpretations; and frequently it is interpreted in the manner which best suits the individual. But besides all this, there has been so much conflicting advice that confusion has been unavoidable.

What the nation is urgently in need of is economy of the right kind—and particularly the cutting down of expenditure which is unproductive. It was recently pointed out by the Prime Minister that real economy lies in the wise use of capital; the expenditure of money at the right time and in the best way. We consider that the planning and carrying out now of extensions that are likely to be required by gas undertakings within a reasonable period is essentially real economy, as being " the expenditure of money at the right time and in the best way." Likely requirements in the matter of new plant may even be construed generously; for prices remain exceptionally low, and employment is still badly needed.

What we do want to see, as Sir David Milne-Watson told the National Gas Council, is further retrenchment in public expenditure.

Opportunity for All

A NOTION has grown, owing to the inevitable wave of amalgamation, that the efficiency of a business concern is proportional to its size, and in the Gas Industry that the small concern is necessarily a weak link in the service gas can offer. We believe in neither of these ideas, though admitting the many advantages which accrue from wise amalgamation. There are gas undertakings in this country which are both small and isolated—where in fact amalgamation is not practicable; but there is no reason why such small undertakings should not be thoroughly efficient in relation to the circumstances of supply, and should not uphold worthily and effectively the service motto of our Industry. Where inefficiency exists it is not caused by the size of the unit, for a large gas-works is, after all, a collection of small ones. Small undertakings have their limitations; they also have especial opportunities, chief among which we regard the personal contact between the management and the consumer. During the past few years we have had several welcome papers by managers of small undertakings, the latest being that by Mr. J. Corrigan before the North of England Gas Managers' Association. This is a most encouraging contribution, and it backs up our oft-repeated contention that, granted a progressive sales policy and plenty of push and determination, there is ample scope for the small works.

There are practical hints in plenty in Mr. Corrigan's vigorous paper, and that his policy is worth following is obvious from the results he has won by it. He manages an undertaking with an output of 85 million c.ft. a year; he serves an agricultural town with 2700 consumers; he is in competition with electricity. We would ask our readers to look at the graph of output during the past ten years—fig. 2 of the paper, published on later pages. Not only has the sale of gas increased by 60 p.ct., but, what is still more satisfactory, the average consumption per consumer shows a marked advance. This is of the greatest importance, for we agree with the author that " many undertakings have been carried away on the flood tide of increasing business due almost entirely to additional consumers," and have not paid sufficient attention to developing the load of existing consumers. Consumption per consumer is the acid test of progress. Mr. Corrigan passes the test with flying colours; and his story of success should prove a valuable tonic to those responsible for the development of small gas undertakings. And in this success the author's policy of maintaining the whole-hearted enthusiasm of every member of his staff, by taking all into his confidence, has doubtless played a considerable part.

A section of the contribution which particularly appeals to us is that dealing with the lighting load at Penrith. The point the author makes is that, no matter how few or how many lighting consumers there may be, a gas undertaking has a duty to show, and the consumers a right to be shown and offered, the latest developments in gas lighting. As a matter of fact, four years ago the Penrith Gas Department did very little business in gas lighting; but attention to the load has quite transformed the situation. Mr. Corrigan effectively quashed any apologetic air in regard to gas lighting and gas lighting fittings. Modern gas lighting, he said, is excellent; and before very long his consumers thoroughly agreed with him. His record in this respect shows what can be done by keen salesmanship, and proves that " everyone a salesman," if practised as well as preached, is a paying proposition. At exhibitions of lighting appliances, for example, every member of the office and fitters' staff has a turn at selling—which gives encouragement, lends confidence, and engenders enthusiasm. Moreover, Mr. Corrigan literally goes into the market place with his lighting fittings, selling cheek by jowl with greengrocers. As a result of all these sales efforts to increase the lighting load there is the changed attitude of the consumers, and " we can say quite definitely that we find it easier to sell other appliances to a consumer who has had the lighting modernized." The manner in which the author tackled the lighting load is indicative of his general sales policy, and our readers will find much of interest in various other schemes he has adopted to encourage sales. Of primary importance throughout, however, is the price at which he is able to sell gas. Small undertakings and high gas charges often go together. Penrith, however, is selling gas (500 B.Th.U.) at from 6·46d. to 5·78d. per therm to ordinary consumers, and at 7·91d. to prepayment consumers. It is difficult to imagine how by amalgamation —if this were possible—the consumers in the area could in this respect be better served. In a word, the managers of the smaller undertakings have no need to lose heart.

Co-operative Research in Australia

" CONCEIVABLY a new era confronts the Gas Industry of Australia, following the unanimous decision of the Board of the Gas Companies' Association of Australia to meet the threat of a fast growing electrical competition by a measure of scientific research." This quotation is from the April issue of the Association's Bulletin, which we have just received, and the " unanimous decision " refers to the establishment of a co-operative central research organization and the appointment of a Research Officer to the Association—the first appointment of its kind in the history of the Gas Industry in the Commonwealth. The Research Officer, to whom we wish all success, is Dr. A. S. Fitzpatrick, who is known to many of our readers as a member of the staff of the Fuel Research Station—a position he vacated only a few weeks ago to take up his new duties in Australia. A graduate of Melbourne University, Dr. Fitzpatrick spent two years in England in the laboratories of Prof. W. A. Bone studying the chemical constitution of Victorian brown coal, in connection with which work he obtained the degree of Ph.D.; and he has a wide experience of general fuel problems. The originator of the scheme of central research in Australia is Mr. P. C. Holmes Hunt, who a year ago suggested the appointment of a Research Officer and the lines of research which might to advantage be followed by the Association. Among his suggestions were the standardization of routine chemical

tests required in gas manufacture, and advising and assisting small works particularly on such matters; examination of gas appliances and investigation of the merits of "efficiency badges;" the preparation of technical memoranda; and the establishment of a library. And it is with these and other suggestions as a basis that it is intended to build up the new Central Research Department. The belief held by Mr. Hunt that a great mass of invaluable data accumulated by a vast volume of research is inaccessible to the man on the job led to the formulation of this new activity; and we are sure that the Gas Companies' Association of Australia will reap a splendid reward from their wise action in establishing this central organization.

PERSONAL

Mr. E. M. EDWARDS, Engineer and Manager to the Sittingbourne District Gas Company, has been appointed Manager of the Port Talbot Gas-Works, in succession to the late Mr. A. J. Bond. The appointment carries a salary of £500 a year with free residence. Mr. Edwards is a native of Neath and commenced his career as a junior clerk in the Neath Gas-Works. He gained rapid promotion under the supervision of Mr. W. Clark Jackson, and after holding a post at Holyhead was appointed Engineer and Manager at Sittingbourne.

Eighty-six applications were received for the post of Chief Assistant Gas Engineer to the County Borough of Wallasey, and Mr. F. N. BOOTH, of the County Borough of Rochdale Gas Department, was selected by the Wallasey Gas and Water Committee, and the appointment was confirmed by the Council at their meeting last month. Mr. Booth has held the post of Chief Assistant Engineer at Rochdale for the past nine years, previous to which he was on the Engineering Staff or Messrs. West's Gas Improvement Company, Ltd., Manchester, and Messrs. Crosfield & Sons, Ltd., Chemical Manufacturers, of Warrington. His general education was obtained at Warrington and the Manchester College of Technology, and his age is 37 years.

Mr. J. M. MCLUSKY, Technical Assistant at the Keighley Corporation Gas-Works since 1922, has been appointed Assistant Engineer and Manager to the Wakefield Gas Company. Mr. McLusky is a son of Mr. W. B. McLusky, Engineer and General Manager to the Halifax Gas Department. Mr. J. M. McLusky was born at Glasgow and educated at Oban High School.

Mr. GEO. P. MITCHELL, Engineer and General Manager to the Blackburn Corporation Gas Department, has been elected a Member of the Institution of Civil Engineers. For some time Mr. Mitchell has been a Member of the Institution of Mechanical Engineers.

Mr. R. J. MEIKLEJOHN, Engineer, Manager, and Secretary of the Rugby Gas Company, playing recently at the Rugby Golf Club, holed the fourth (165 yards) in one and paid the usual penalty.

CORRESPONDENCE

"400 B.Th.U.'s?"

SIR,—Having been unable to participate in the discussion on the paper by Mr. R. H. Duxbury at the meeting of the North of England Gas Managers' Association, I should like to make a written comment on Mr. Duxbury's query "Where is the snag?" in reference to complete gasification.

The answer seems to lie in his final table of costs, where he has had to put the value of coke 12½ p.ct. lower than that of coal—*i.e.*, 17s. 6d. per ton as against £1 per ton for coal, in order to make complete gasification show to advantage against straight carbonization. While this position exists at South Bank, it is surely only representative of a few undertakings unfavourably situated for marketing residuals. As a manufactured smokeless fuel coke should command in normal circumstances a higher price than raw coal, or how could there be a coking industry?

Total gasification, whether performed direct in special plant or in stages via horizontal retorts and external generators, or in vertical chambers or retorts, necessarily includes the two processes, "straight" carbonization, and water gas generation. It can readily be shown that gas therms from the former are almost always more economically produced than the therms yielded by steaming coke. There are numerous reasons for this. First is the well-known fact that the overall efficiency of "straight" carbonization is about 80 p.ct. as compared with about 70 p.ct. for water-gas generation. Then there is the fact that for carbonization alone the raw material—coal—is in general of lower value than the raw material—coke—consumed in water-gas generation. It should further be remembered that the profit obtained normally by the sale of coke can be credited to the former and so still further lower the cost of the "straight" gaseous therm.

Though it might be argued that the primary business of the Industry is to sell gas, it still remains a fact that most undertakings sell more therms in solid than in gaseous form. Thus for every 73 therms of gas produced in horizontal retorts there are also available for sale roughly 150 therms as coke, 18 therms as tar, and perhaps 3 therms as benzole. These "residuals" cost very little to distribute in comparison with gas, and when their market value is favourable as compared with that of the parent substance, coal, it is surely advantageous to an undertaking to increase its turnover and to dispose of these at profit instead of converting them into gas which can be equally easily obtained by using more coal.

Gas manufacture is, in effect, already well established as an important branch of the coal processing industries, and it is well to remember that, as there will always be a field for solid smokeless fuel, it will remain an advantage to the Gas Industry as compared with its electrical competitors to have the additional *entrée* to the consumer's goodwill afforded by the supply of good coke and suitable appliances for its use.

To supply a pure straight coal gas of 560 B.Th.U. per c.ft. would be a policy probably impossible of universal attainment, but there appear to be many strong arguments for a more general use of the round figure 500, which has the advantage of simple maintenance. Such a policy would still permit almost the maximum yields of benzole, high-temperature tar, and solid smokeless fuel to be available for disposal as an accompaniment to gas supply.

Mr. Duxbury, in advocating the lower figure of 400 B.Th.U., in view of the peculiar local circumstances he mentions, appears to have made out the best case possible for the limited application of complete gasification at gas-works, and it is interesting to note that the type of plant he describes has proved equal to expectations. Though not, perhaps, desirable for gas undertakings, there would appear to be a field for complete gasification not mentioned in the paper—*i.e.*, the treatment of high-ash low-quality slack which is unsuitable for coke production, the low grade gas being used under boilers or in gas engines for power production.

Yours, &c.,
L. H. SENSICLE.

Artillery House, Westminster,
May 9, 1932.

[Mr. Sensicle would have made these remarks at the meeting had there been an opportunity of so doing. Pressure on our space prevented their inclusion as a written contribution to the discussion.—ED. "G. J."]

"400 B.Th.U.'s."—There were two errors in our report of the discussion on the paper by Mr. R. H. Duxbury in last week's "JOURNAL," p. 329. Mr. C. F. Blincoe, of Middlesbrough, is reported as having said "that the analysis which the Author had referred to as having been carried out by himself and the President only dealt with inerts." This is not correct. The analysis as far as Mr. Blincoe was concerned certainly did only deal with the nitrogen content, but the analysis made by the West Hartlepool Chemist, by the courtesy of the President, dealt with the full analysis. The second point arises in the Author's reply. Mr. Duxbury was reported as having said "that the cost of the Durham coal was 78s. per ton delivered." Obviously this is wrong. The figure should be 18s. per ton delivered.

GAS LIGHTS . . . . *by Fred May*

Published by the "GAS JOURNAL."

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Gas Light and Coke Company.
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THE NEWS OF THE WEEK

Bradford Gas Committee have consented to the name "Bradford" painted in white on the top of one of the city's largest gasholders as a guide to aviators.

The Union Syndicale de l'Industrie du Gaz en France is arranging to hold its 55th Annual Congress in Paris from June 14 to 17 next, to be followed by a two-day visit to Dijon.

Association of Statutory Inspectors of Gas Meters.—A meeting of the Council of this Association will be held at the County Hall, Westminster Bridge, London, on Tuesday, June 7.

Sales of Gas at Dukinfield amounted to 94 million c.ft. during the year ended March 31 last, this being a slight decrease on the corresponding figure for the previous financial year.

A Benzole Recovery Plant is to be installed by the Goole Urban District Council, estimated to produce 2 gallons of benzole per ton of coal. It is anticipated that the plant will pay for itself within twelve months.

The Leeds Gas Committee are to make arrangements for space to be allotted at the Yorkshire Show in July next for a travelling showroom containing an exhibition of gas appliances for cooking, heating, water heating, and lighting.

Approval has been Given by the Edinburgh Corporation to a proposal to erect a new carburetted water gas plant at their Granton Gas-Works at a cost of £20,000. The new plant will be capable of producing 2,250,000 c.ft. per diem.

North of England Auxiliary Section.—The 24th half-yearly meeting of the Auxiliary Section of the North of England Gas Managers' Association will be held at the works of the Washington Chemical Company, Ltd., on Saturday, June 18.

Aerial Signposts.—Gasholders are to be used as aerial signposts to point the way to Bristol. With the co-operation of the Bristol Gas Company, arrangements have been made to paint the name of Bristol on the gasholders at Horfield and Warmley.

Society of British Gas Industries.—The annual general meeting of the Society will be held at the Hotel Metropole, London, on Thursday, May 26, at 2.30 p.m., when the Right Hon. Lord Eustace Percy, M.P., will deliver his Presidential Address. The dinner of the Society will take place at the Hotel Metropole the same day.

Gas for Driving Motor Vehicles.—At a recent meeting of the Gas Committee of the Burnley Corporation the Gas Engineer (Mr. J. H. Clegg) submitted a report on the possibilities of the use of town gas as fuel in place of petrol for motor vehicles, and copies of the report were circulated to the members of the Committee for consideration at the next meeting.

Primitiva Holdings, Ltd.—The third annual general meeting of this Company is to be held on Tuesday, May 24, at Beaver Hall, Garlick Hill, Cannon Street, E.C. 4. The Directors' report shows a net profit for the year of £84,957, and after meeting the usual charges there remains a sum of £76,368, out of which the Directors recommend a dividend of 4 p.ct., less tax. After adding the balance brought in from last year, there is a total carry-forward of £14,622.

Gas Production in South America.—Despite the increasing use of electricity, steady progress is being made with the production and consumption of gas in the Argentine. Thus, according to the report lately issued, the output from the works of the Compania de Gas de la Plata amounted during the past year to no less than 83,975,000 c.ft. as compared with only 63,197,000 c.ft. in 1930. During the same period the number of consumers increased from 3197 to 4132. The Compania Explotadora de Gas, of Bernal, also reports an output of 42,328,000 c.ft. for 1931 as against only 37,919,000 c.ft. in the preceding twelve months. The number of consumers also advanced from 1681 to 2030.

Wales and Monmouthshire Association of Gas Engineers and Managers.—The annual meeting of the Association will be held at the Hotel Metropole, Swansea, on Thursday, May 26, at 11 a.m., when the chair will be taken by Mr. Ernest Ablett, the President. Following luncheon at the invitation of the Chairman and Directors of the Swansea Gas Light Company, the members will visit the Morriston Gas-Works. On the previous day the Wales and Monmouthshire Gas Association Cup is to be played for on the links of the Clyne Golf Club.

Imperial Continental Gas Association.

The Association's operations in Belgium, Holland, and Czecho-Slovakia during the 108th year of its commercial activity ended March 31, 1932, continue to give satisfactory results, according to the report of the Directors.

The profits of the Subsidiary Companies have been well maintained. In some cases they have deemed it prudent to reduce their dividends, but their reserves have been proportionately strengthened. In accordance with the resolution passed at the Extraordinary General Meeting of the proprietors, held on March 22, 1932, the paid-up capital of the Association has been increased to £5,600,000 by the issue of £2,800,000 new paid-up stock to the proprietors who were on the registers on March 31, 1932, in proportion to the amounts of their existing holdings and ranking *pari passu* therewith for the final dividend for the year ended March 31, 1932.

The audited statement of accounts for the twelve months shows that the balance to the credit of the profit and loss account was £502,000, to which has to be added the balance brought forward, £437,368, making a total available for appropriation of £939,368. Out of this balance there has been paid on the capital of £2,800,000 an interim dividend of 7½ p.ct., less income-tax at 5s. in the £, leaving £781,868. The Directors now recommend: (*a*) The payment of a final dividend of 7 p.ct., less income-tax, on the increased capital of £5,600,000, making a total dividend equivalent to 10¾ p.ct., less tax, for the year upon the doubled capital, £294,000; (*b*) a profit-participating bonus to the staff, £4515; leaving a balance to be carried forward of £483,353.

The Directors record, with deep regret, the death, on June 7 last, of Col. H. Le Roy-Lewis, C.B., C.M.G., D.S.O., who had been a Director since 1903 and Chairman since 1928. Sir Henry Birchenough, Bt., K.C.M.G., who has been a Director since 1899, has been elected by the Board to fill the office of Chairman thus rendered vacant.

Institution of Gas Engineers.

The Trustees and Committee of the British Institute in Paris have decided to offer for 1932-33 scholarships to be held in Paris.

The Committee are desirous of aiding not only students who wish to pursue some course of advanced study in Paris, but also students who are anxious to obtain a thorough knowledge of contemporary French life for business or other reasons. They are accordingly prepared to consider applications from men and women who are engaged, or propose to engage, in commerce and industry, as well as from those concerned primarily with teaching or research.

Further information may be obtained from the Secretary of the Institution of Gas Engineers or intending applicants for the scholarship may write to Mr. B. S. Townroe, 16, Hanover Square, W. 1, or make an appointment for a personal interview.

Scholarships to a total value of £500 are offered by the Committee of the British Institute in Paris, tenable during the year 1932-33.

They will be given to men and women of British Nationality, who are prepared to follow courses at the Guild of the British Institute in Paris, and, if desirable, in any of the schools of learning in Paris. Preference will ordinarily

THE NEWS—continued.

be given to candidates who are not less than 21 years of age on July 31, 1932.

Members of the Institution are invited to attend the Joint Meeting of the Illuminating Engineering Society and the Association of Public Lighting Engineers which will be held in the Lighting Service Bureau, Electric Lamp Manufacturers' Association, 15, Savoy Street, Strand, London, W.C. 2, at 6.30 p.m. on Tuesday, May 24, when a paper on "The Work of a Public Lighting Department" will be read by Mr. E. Marrison and will be followed by a discussion. Light refreshments will be provided at 6.30 p.m.

Admission tickets may be obtained from the Secretary, the Institution of Gas Engineers, 28, Grosvenor Gardens, London, S.W. 1.

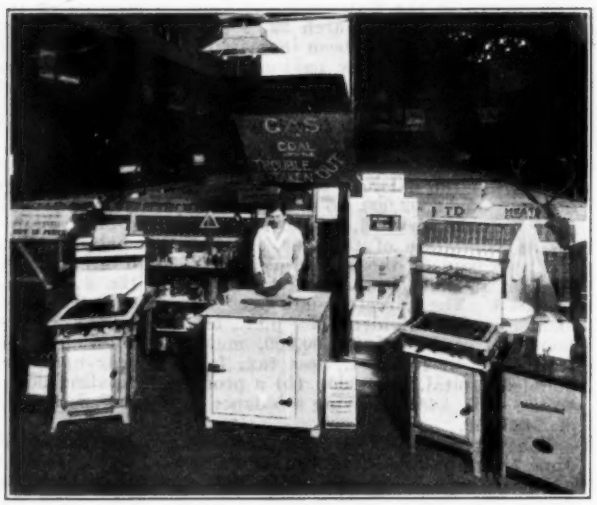
Copies of the following recently issued British Standard Specifications may be obtained, price 2s. each, from the Institution of Gas Engineers.

Bright square head set-screws (with flat chamfered ends) (B. S. Whitworth (B.S.W.) and B. S. Fine (B.S.F.). No. 451—1932).

Bright countersunk, round, and cheese head screws (B. S. Whitworth (B.S.W.) and British S. Fine (B.S.F.). No. 450—1932).

A Successful Exhibition.

During the past two years the Perth Corporation have run successful Local Trades Exhibitions in the City Hall, and the Exhibition this year has been a very great success in point of both attendance and sales. The Exhibition was open for a week and the attendance reached the total of over 20,000.



The Gas Department occupied three stalls near the platform and also had cookery demonstrations on the platform of the hall. The sales at the exhibit exceeded £1000. Our photograph shows the cooking demonstrator using a table model refrigerator as a table.

Coke Oven Gas Supply at Derby.

The development of coke oven gas supply was the subject of an address by Mr. J. P. McCrae, Chief Engineer of the Derby Gas Light and Coke Company, at the weekly luncheon of the Derby Rotary Club on May 9.

Mr. McCrae, with the aid of lantern slides, explained the recent operations of the Gas Company which involved the laying of about 16 miles of high-pressure mains, the construction of a 2 million c.ft. gasholder at Belper, and purifiers at Blackwell and Clay Cross collieries. In addition, a compressing plant, capable of dealing with 6 million c.ft. per day, had been erected at the Belper works, and the whole undertaking had cost £100,000. The commercial uses of coke oven gas, which could be taken straight from the collieries, were receiving attention all over the country, said Mr. McCrae.

Mr. F. Nicholls, Borough Electrical Engineer, proposing a vote of thanks, said the Gas Company had shown courage in taking over and making good use of what had been looked upon as a waste product.

National Gas Council.

Meeting of the Central Executive Board.

A Meeting of the Central Executive Board of the National Gas Council was held at the Hotel Metropole, London, W.C. 2, on Tuesday, May 10—Sir David Milne-Watson, LL.D., D.L., in the Chair.

Resignation of Mr. J. H. Ellis.—The Chairman reported with regret the resignation of Mr. J. H. Ellis, Vice-Chairman of the Board and Chairman of the Plymouth and Stonehouse Gas Light and Coke Company. It was agreed that a letter be sent to Mr. Ellis expressing the Board's appreciation of his services, and conveying their best wishes to him.

Nomination of Candidate for the Office of President.—Sir David Milne-Watson was unanimously nominated candidate for the office of President of the Council for the ensuing year.

Gas Legislation.—It was reported that, since the last meeting of the Board, the Departmental Committee which is considering the question of amending gas legislation had issued an Interim Report relating to the powers of investment which should be conferred upon gas undertakers. The whole question had been referred to a Joint Committee of both Houses of Parliament, which sat on May 5 and 6, presided over by Lord Marks; and Mr. Ogilvie (Joint Manager) had given evidence before this Joint Committee on behalf of the National Gas Council [see last week's "JOURNAL"].

Gas Undertakings Bill, 1932.—It was reported that, owing to the appointment of the Joint Parliamentary Committee already referred to, this Bill had been held up until a report—which was expected shortly—had been received from the Joint Parliamentary Committee.

Mains and Cables in Highways.—It was stated that the Negotiating Committee on Mains and Cables in Highways appointed by the Conjoint Conference of Public Utility Associations had met again on April 29. It appeared that the Negotiating Committee might almost immediately be in a position to put forward definite proposals to the Associations concerned, and it was agreed that the Committee appointed by the Board in 1929 in connection with this matter should meet Mr. Stephen Lacey and Mr. Ogilvie (the representatives of the Gas Industry on the Negotiating Committee) prior to the next meeting of the Board.

The Board adjourned until Tuesday, June 14.

Prof. Wheeler and the Salerni Process.

In view of reports which have appeared in the Press, Prof. Wheeler desires that it should be clearly stated that he is in no way concerned with the commercial exploitation of the Salerni low-temperature carbonization process. He has given advice and assistance in the technical development of this process such as, in his position as Professor of Fuel Technology, he gives in any other coal industry problem; but he is not in any way concerned commercially in this particular process.

Gas Appliance Exhibition at Lingfield.

Great interest was shown at the opening ceremony of an Exhibition of Gas Appliances on Monday, May 9, organized by the East Surrey Gas Company at the Victoria Memorial Institute and Club, Lingfield.

Mr. R. R. E. Perkins, Chairman of the Lingfield Chamber of Commerce, attended to perform the ceremony. Mr. W. Lees Stenning (Chairman of the Company) presided, and among those present were Mr. W. H. Bennett (Managing Director of the Company), Mr. Bruce Roberts (Vice-Chairman of the Lingfield Chamber of Commerce), Mr. Ernest Scears (Chief Engineer), Mr. Arthur Tennant (Sales Manager), and Mr. H. J. Humphrey (District Manager at Lingfield).

Mr. Perkins congratulated the East Surrey Gas Company on the very fine show they had brought to Lingfield for their education, and expressed the hope that they would be besieged with inquiries and subsequently orders.

Mr. Bennett expressed his appreciation of the kind things Mr. Perkins had said regarding the Company and their endeavours, and trusted that his hopes of orders being secured would be realized. He pointed out that the object of the exhibition was not directly to take orders, but to demonstrate some of the many ways in which gas can be used. He hoped that in future, when requiring to heat, cook, wash, or refrigerate, the people of Lingfield would know where to come.

A feature of the exhibition was the series of gas cookery demonstrations given by Miss E. Kirkby, M.T.R.S., M.C.A.

(Diplomé Gloucestershire Training College of Domestic Science), of Messrs. Radiation Ltd., using a "Regulo"-controlled "New World" cooker. The preparation of complete dinners in the oven at one setting aroused considerable interest. A "Ranelagh" slot cooker was also used for some of the demonstrations.

The hall was arranged with attractive stands down each side; and the bathroom, with bath, pedestal wash basin, and boiler all in an artistic shade of green, was the admiration of all. Many gas cooking stoves were on view, demonstrating that they can now be acquired to harmonize with the colour scheme of the home. The stand devoted to refrigeration showed the new "Electrolux Minor" model—air-cooled and absolutely silent. Demonstrations of the "Wonder Washer" were staged during the week.

At the entrance of the hall was an instructive exhibit of the many bye-products obtained as the result of the carbonization of coal at the gas-works.

Grantham Gas Company Seek Special Order

Under the chairmanship of Dr. G. A. C. Shipman, a meeting of the Grantham Gas Company was held on May 4 to consider the promotion of an application to the Board of Trade for a Special Order, under the Gas Undertakings Acts, 1920 and 1929.

This Order seeks additional and amended powers, it being thereby intended to extend the limits of the Company's supply; to facilitate the issue of ordinary and preference capital; under certain conditions to exceed the basic dividend of 5 p.ct. per annum; and to establish special purposes, renewal, and reserve funds, and to make other provisions as may appear expedient for the conduct of the Company.

The Chairman having outlined the main features in relation to the application as it affects shareholders and consumers, a resolution approving of the course suggested by the Directors was unanimously adopted.

New Material for Air Conditioning.

A new market for gas, with great possibilities for sales during off-peak months, has been opened up by the discovery of a new chemical compound which tests indicate will make air conditioning available to home owners generally.

The new compound is the result of eighteen months of research conducted by the metallurgical laboratory of the Peoples Gas Light and Coke Company, under the direction of Mr. Robert G. Guthrie, Chief Metallurgist, and Dr. Oscar J. Wilbor, Research Chemist. It has been named "lamisilite" by its discoverers, because of its laminated structure and siliceous nature.

Lamisilite, it is explained by Mr. Guthrie, has the property of removing moisture from the air much more rapidly and thoroughly than other compounds now available for this purpose. It can be produced at low cost, and a smaller amount of it, which will make possible a reduction in size of air conditioning installations, will do the same amount of work as much larger installations of the materials now in use.

"The old expression 'It's not the heat, it's the humidity' is founded on fact," said Mr. Guthrie in announcing the discovery. "The most successful and healthful air cooling and conditioning devices in use to-day are those which remove excess moisture from the air in addieion to lowering the temperature. Warm, moist air, laden with dust and obnoxious odours, is drawn through a fine spray of water, where it is washed and cooled, and then passed over a bed of lamisilite, which delivers it cooled, dry, and odourless. The lamisilite is easily dried out, after it has adsorbed moisture, with an automatically controlled gas flame."

"It will be possible, with a small air conditioning unit, designed to serve only one room in a house or apartment, to relieve and often cure sufferers from asthma and hay fever by insuring them a full night of restful sleep in an atmosphere free from dust and bacteria," Mr. Guthrie stated. "The cost will be about 2½ cents per hour for operation of the unit, which can be cheaply manufactured as air conditioning becomes a necessity instead of a luxury."

Mr. Guthrie emphasized the fact that merely cooling the air is not productive of real comfort. "It has long been known that the human body, under proper conditions of humidity, is the best of all automatic refrigerators, as the pores in the skin rapidly evaporate moisture, thereby lowering the skin temperature and keeping us comfortable," he said. "We can be perfectly comfortable at high temperature if the air is dry enough to permit the pores in the skin to evaporate moisture."

"Another important feature of the discovery of lamisilite is that it makes very valuable certain types of large deposits of a very common ore, which until now have not been worth digging out of the ground," Mr. Guthrie added. "For obvious reasons we are not at liberty to divulge the name of this ore, but its discovery creates a new industry that eventually will employ a great many men and require the purchase and construction of equipment to operate it."

N.S.W. Gas Legislation.

A Bill was recently submitted in the New South Wales Parliament to provide for a reduction in the standard rate of dividend to be paid by certain gas companies and to fix the dividend rates payable by the Electric Light and Power Supply Corporation, Ltd.

It is proposed that the maximum rate on ordinary share capital shall be 6 p.ct. and on preference share capital 5½ p.ct. This latter provision only affects the electricity company, which has issued 7 p.ct. preference shares. These rates, however, may be increased subject to a reduction below the standard price in the rates charged for gas. A further provision of the Bill is that a Commission shall be constituted within fourteen days after proclamation to inquire into the affairs of these companies.

The Bill also contains other provisions which, if made law, will have a serious effect on the finances of the companies and react on the interests of the shareholders and the consumers.

New Glass-Smelting Furnace at Morley.

A new glass-smelting furnace was completed at the works of Messrs. Hailwood & Ackroyd, Ltd., Morley, on May 1, when Mrs. Hailwood, wife of Mr. E. A. Hailwood, Managing Director of the firm, performed the ceremony of fixing the last crown brick.

In the course of a few remarks, Mr. Hailwood said that this was the third reconstructed furnace. They had two others, somewhat similar except that they were for open pots while this last one was for closed pots and heat-resisting glass. He referred to the difficulty in which the firm was placed owing to the recent reduction in the tariff on glassware from 50 p.ct. to 20 p.ct. The effect was, he stated, that many firms who had promised orders drew back, and these orders were going abroad, with the result that it was almost hopeless to look forward to work for this particular furnace.

A vote of thanks to Mrs. Hailwood was carried with enthusiasm on the proposition of Mr. Knowles, Engineering Works Manager, and after Mrs. Hailwood had briefly replied, Mr. Tirebuck proposed a vote of thanks to Mr. Hailwood for presiding over the ceremony. Those present were then shown round the works.

Gas Acts (1920 and 1929) Orders.

SECTION 1.

Fleetwood Gas Company.

The Company are applying for an Order to permit them to borrow an additional amount of 50 p.ct. (over and above the amount already authorized) of the paid-up capital for the time being of the undertaking and of any premiums paid in respect thereof—that is to say, a sum equal to the aggregate amount of such paid-up capital and premiums.

Trade Notes.

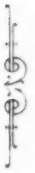
Electrostatic Detarrer.

The Bournemouth Gas and Water Company have decided to install an electrostatic detarrer on the carburetted water gas plant at their Pitwines Station. The plant is to handle 5 million c.ft. of water gas per day, and the Directors have accepted the tender of Messrs. Simon-Carves, Ltd., for this work.

New Furnace at Wellingboro' Iron Company, Ltd.

The Stanton Ironworks Company, Ltd., near Nottingham, having acquired a controlling interest in the Wellingboro' Iron Company, Ltd., have decided to erect a new furnace plant similar to the modern plant recently set to work at Stanton. The present furnace plant will be kept in operation up to July 31 next, when the reconstruction work will be taken in hand.

AMMONIA AND BENZOLE . . . RECOVERY* . . .



Feld Washers at a coke oven installation

Comprehensive investigations were carried out on an installation which has been at work for 3½ years and as a result it has been possible to formulate schemes which should enable even greater economies to be obtained in a new installation than were realized with the existing installation in comparison with hurdle washers of the conventional tower type.

Feld washers are of the centrifugal type, and each washer contains a number of elements. The factors which are concerned in their efficient operation are the speed of rotation, the rate of circulation of the washing medium, the number of elements and the effective washing space.

The plant under investigation was designed for 900,000 c.ft. of gas per hour and consisted of two ammonia washers 28·5 ft. high and 13·1 ft. in diameter and two benzole scrubbers of the same size. Each pair of washers was intended to be used in series. The ammonia washers comprised one washer with 6 elements and one with 7 elements, the number of elements in the benzole washers being the same, though only 5 and 6 were used.

For the same quantity of gas, six hurdle washers 131 ft. high and 11·5 ft. in diameter would have been required. Feld washers thus effect a considerable economy in ground space.

The investigations were carried out with a gas flow of 700,000 c.ft./hour arising from the carbonization of 1500 tons of dry coal per 24 hours. The washing space was 1 c.ft. per 608 c.ft. of gas per hour and the gas velocity 2·2 ft./sec. With a hurdle washer, only 28 c.ft. would be treated per c.ft. of washing capacity with a similar gas velocity.

It was found that efficient ammonia removal could be effected with use of one scrubber only, though the volume of water circulated per hour was greater than when the two scrubbers were used in series and the strength of the liquor was lower. The pressure drop with the 6 element washer was 0·8 in. W.G. and that with the 7 element washer 1 in. W.G. On the basis of existing practice with hurdle washers, it was concluded that an ammonia content of 2 grains/100 c.ft. in the outgoing gas should be aimed at.

The following figures may be quoted for the washers working at 110 r.p.m.:

—	Gallons of Water per Hour.	Approximate Strength of Liquor Produced.	Ammonia in Outgoing Gas. Grains/100 C.Ft.
		Oz.	
Two washers (one 6 and one 7 elements).	880	15	7
	1100	12	2
	1250	10	1·3
	1900	7	0·6
7-element washer only	1900	7	7
	2380	6	5
	3100	4½	2

When the speed of rotation was 85 r.p.m., the amount of ammonia left in the gas for a definite rate of circulation of water was slightly higher.

The steam consumption including that required for power and for distillation of the ammonia is slightly less with Feld washers than with hurdle scrubbers. With the two washers (13 elements in all) working at 110 r.p.m., the steam consumption is 115 tonnes per day (including distillation), or 107 tonnes per day at 85 revolutions/minute, the figure for hurdle scrubbers being 119 tonnes per day. The power consumptions of the rotors of the two washers were 63 h.p. and 70·5 h.p. for the 6 and 7 element washers respectively.

The capital cost of the Feld washers (even allowing for working at 80 p.ct. capacity as in the investigation) is less than that of hurdle washers and the operating costs are less. This is shown in the table at the top of the next column based on currency at the par of exchange.

The annual saving is equivalent to 4s. 8d. per ton of sulphate of ammonia, even on the basis of the Feld washer working at only 80 p.ct. capacity. The saving is greater if, as is the case with hurdle washers, use is made of virgin liquor for scrubbing in conjunction with fresh water.

—	Hurdle Washers.	Feld Washers.
Rated capacity, c.ft./hour	700,000	900,000
Working capacity in the investigation, c.ft./hour		700,000
Cost	£11,500	£7,500
Capital charges, 15 p.ct. per annum .	£1,725	£1,125
Maintenance, 3 p ct. per annum . . .	345	225
Extra steam consumption, 365 × 11½ tons at 3s.	630	
Extra water consumption, 365 × 15,400 gallons at 4½d./1000 gallons . . .	105	
Annual cost	£2,805	£1,350

Still larger savings, amounting to 9s. 4d. per ton of sulphate of ammonia, could be effected in a new installation by increasing the size of the Feld washer and using only one washer with 9 elements instead of two washers with 6 and 7 elements respectively. If three large washers each with 9 elements and of height 42·6 ft. and diameter 14·8 ft. were installed, one could serve for ammonia recovery and one for benzole recovery, the third being a stand-by and capable of being brought into use for either purpose by appropriate connections.

Benzole Recovery.

For benzole recovery, only 6 and 5 elements were used in the two scrubbers or 11 in all, since these proved sufficient. The maximum speed is 95 r.p.m. To absorb the heat evolved during absorption of the benzole, water was passed through coils in the scrubbers though heat interchange was not very efficient since, owing to constructional grounds, counter current flow was not possible. It was therefore possible to pass all the water required for the gas coolers through the benzole scrubbers, the result being that a rise of temperature of only 1° C. was suffered by the water. Cooling is thus obtained without cost. The content of spray in the outgoing gas was as good as with hurdle scrubbers.

On the basis of existing practice with hurdle washers it was concluded that a benzole content of 6·2 grammes/100 c.ft. in the outgoing gas should be aimed at, with a scrubbing temperature of 20° C. This was achieved. The quantity of wash-oil circulated was approximately 4500 gallons per hour, the pressure losses being 1-1½ in. W.G. in each scrubber.

Feld washers are not so sensitive as are hurdle washers to thickening of the wash-oil, since this can be compensated by an increased power consumption.

Satisfactory removal of benzole could be achieved with only 8 elements though the steam consumption is increased. With 11 elements and a speed of rotation of 95 r.p.m., the steam consumption was 77 tonnes per day compared with 79 tonnes for a hurdle washer. With 8 elements, the steam consumption was increased by 5½ tonnes. Better results are obtained at 80 r.p.m., the steam consumption being then 70·6 tonnes per day with 11 elements in use. Under these conditions, the power consumption was 50 h.p. in the scrubber with 6 elements working and 42·7 h.p. in the scrubber with 5 elements working.

As in the case of the ammonia washers, the capital cost of Feld washers for benzole recovery is less than that of hurdle washers. The total saving in capital and operating costs, even with the Feld washers working at only 80 p.ct. capacity, was equivalent to ¾d. per gallon of refined benzole. If the scheme outlined above of three large washers for ammonia and benzole were employed, one working on ammonia recovery, one on benzole recovery, and one being a standby, the saving would be approximately 0·43d. per gallon of refined benzole. The total annual saving on the basis of the carbonization of 1500 tons of dry coal per day, including that on the sulphate of ammonia and that on the benzole, was £3260 in comparison with hurdle washers, though the saving could be increased to £5000 in a new installation on the lines indicated.

* Abstract of a technical description of the operation of Feld washers given by H. Weittenhiller in "Glückauf," 1932, **68**, 313-319 (April 2), and 343-349 (April 9).

National Gas Council of Great Britain and Ireland

FOURTEENTH ANNUAL MEETING

The Fourteenth Annual Report and Accounts, covering the year ended March 31, which had been circulated among the members, were unanimously adopted without discussion at the General Meeting, which was held on May 10, at the Hotel Metropole, Northumberland Avenue, W.C.—Sir DAVID MILNE-WATSON, LL.D., D.L. (the President), in the chair.

The meeting was preceded by an informal luncheon, at which the President was supported by Mr. Wm. Cash (Bournemouth Gas and Water Company), Mr. J. H. Canning (Newport (Mon.) Gas Company), Mr. J. E. Daw (Exeter Gas Light and Coke Company), Sir Francis Goodenough, C.B.E. (British Commercial Gas Association), Mr. F. H. Jones (Wandsworth and District Gas Company), Alderman Sir Wm. Kay (Manchester Corporation Gas Department), Alderman J. H. Lloyd (Birmingham Corporation Gas Department), Dr. E. W. Smith (Messrs. Woodall-Duckham Company), Alderman Sir Chas. W. Starmer (County Borough of Darlington Gas Department), and Sir Wm. Whyte (Scottish District Executive Board of the National Gas Council).

The Minutes of the previous annual general meeting were taken as read and signed.

THE LATE MR. JACOBS.

The PRESIDENT, before proceeding to the ordinary business of the meeting, referred to the loss which the Industry had sustained through the sudden death of Mr. Jacobs, of Southampton. Mr. Jacobs, he said, was known to all of them as a faithful and true friend, and everybody mourned his death. He had been connected with the Gas Industry and its various organizations for a very large number of years, during which he had taken keen interest, and had always been extremely helpful in their deliberations. Mr. Jacobs would be missed very much for he was of a kindly, genial disposition, and an excellent man of business and adviser in difficult times. A memorial service was being held that afternoon, but unfortunately, owing to the annual meeting of the Council, it was not possible for anyone representing them to be present.

On the suggestion of the President, those present stood for a few moments in memory of Mr. Jacobs.

MEMBERS OF THE CENTRAL EXECUTIVE BOARD REPRESENTING DISTRICT EXECUTIVE BOARDS AND ASSOCIATED BODIES.

The SECRETARY (Mr. W. J. Smith) read the list of Members of the Central Executive Board appointed and nominated respectively by the District Executive Boards and associated bodies, as follows:

Eastern District.—Messrs. C. Rhodes Armitage (British Gas Light Company, Ltd., Norwich), Frank Prentice (Ipswich), R. G. Shadbolt (Boston), and W. W. Townsend (Colchester).

Irish District.—Messrs. R. Bruce Anderson, A.M.Inst.C.E. (Waterford, &c.), W. J. Grey, A.C.A. (Alliance and Dublin), J. McNicholl (Cork), and J. D. Smith, M.Inst.C.E., J.P. (Belfast).

London District.—Messrs. Thomas Hardie, M.Inst.C.E. (Gas Light and Coke Company), F. H. Jones, M.Inst.C.E. (Wandsworth), W. J. Sandeman (Croydon), and H. C. Smith, M.Inst.C.E. (Tottenham).

Manchester District.—Messrs. G. S. Frith (Runcorn), J. H. Sillitoe, A.C.I.S. (Manchester), W. J. Smith, B.Sc. (Bolton), and S. Tagg, M.Inst.C.E., J.P. (Preston).

Midland District.—Messrs. Leslie E. Clift (Redditch), P. N. Langford (Coventry), Alderman T. Mitchell, O.B.E., J.P. (Stoke-on-Trent), and A. W. Smith, F.C.I.S. (Birmingham).

Northern District.—Messrs. J. E. Blundell, M.Inst.C.E. (Carlisle), H. Lees, A.M.Inst.C.E., J.P. (Hexham), T. P. Ridley, F.C.I.S. (Newcastle-on-Tyne), and F. P. Tarratt, M.Inst.C.E. (Newcastle-on-Tyne).

Scottish District.—Messrs. G. Braidwood (Coatbridge), George Keillor (Greenock), John Lang (Vale of Leven), and J. W. Napier (Alloa). Sir William Whyte, O.B.E., additional Member (not more than 4 representatives to attend Meetings of Board, see C.E.B. Minutes, 12/10/26).

Southern District.—Messrs. Chas. F. Botley, M.Inst.C.E. (Hastings), Wm. Cash, F.C.A., J.P. (Bournemouth), H. C. Head, M.Inst.C.E., M.I.Mech.E., M.I.Chem.E. (Winchester), and A. Valon, M.Inst.C.E. (Bexhill-on-Sea).

South Wales District.—Messrs. Wm. Clark Jackson, A.M.I.Mech.E. (Neath), W. H. Johns, M.I.Mech.E. (Swansea), J. E. Kenshole (Merthyr Tydfil), and H. D. Madden, M.Inst.C.E. (Cardiff).

South-Western District.—Messrs. S. E. Halliwell, F.C.I.S. (Bristol), S. J. Ingram (Truro), and W. N. Westlake (Exeter).

Yorkshire (W.R.) District.—Messrs. H. E. Bloor, B.Sc., B.Eng. (York), E. H. Hudson (Normanton), A. L. Jennings (Spenborough), and C. S. Shapley, M.I.Mech.E. (Leeds).

Representing the British Commercial Gas Association.—Messrs. John E. Daw, J.P., R. Halkett, Councillor G. H. Kitson, and Sir David Milne-Watson, LL.D., D.L.

Representing the Gas Companies' Protection Association.—Messrs. R. J. Auckland, F.C.I.S., R. W. Edwards, D. H. Helps, A.M.Inst.C.E., and Wm. Phillips.

Representing the Institution of Gas Engineers.—Messrs. J. H. Canning, O.B.E., F.C.S., H. E. Copp, M.Inst.C.E., R. E. Gibson, M.Inst.C.E., and J. Terrace, M.Inst.C.E.

SIR DAVID MILNE-WATSON'S ADDRESS.

The PRESIDENT, in moving that the annual report and statement of accounts for the twelve months ended March 31, 1932, as circulated, be approved and adopted, said:

Before attempting to review the work of the Council during the past year, I feel I must refer to the great loss which the Gas Industry and the country have sustained by the death at such an early age of our friend and colleague, Sir Arthur Duckham. Despite his widespread interests he was always ready to devote his time, energy, and skill to the furtherance of those schemes which he felt would benefit our Industry, and his co-operation was of the utmost value. You will remember that at our last General Meeting he was with me on this platform, and to-day we miss his cheerful personality and mourn the loss of a true friend.

I am very sorry to report that we are to lose the services of Mr. J. H. Ellis, of Plymouth. Mr. Ellis is seeking the increased leisure which he has so well earned, and with his departure we shall lose a good friend who always seized every opportunity of championing the cause of the Industry for which he worked so conspicuously and so well. I feel sure it will be the desire of this meeting that we should thank him for the services he has rendered both to the Council and the Industry, and send to him our best wishes in his retirement.

The report once again runs to considerable length, but even so it cannot do more than give an outline of the work undertaken by the Council during the year. The monthly reports must be referred to for further details, and also for information in regard to those matters of more individual concern which have been dealt with.

When we met a year ago I referred to the very critical state of trade and industry which then prevailed, and expressed the fear that we had not yet seen the worst. Unhappily my fears proved only too well-founded, and very soon afterwards we found ourselves as a nation faced with a financial crisis of the first magnitude. Fortunately, the situation was taken in hand by the National Government with courage and determination. The immediate danger was avoided by taking instant steps to restore confidence in our financial stability, and subsequent action indicates a firm resolve to apply whatever remedial measures may seem best calculated to secure a return to prosperity. The result is that the situation to-day is more hopeful than it was some months ago, and I believe that if in conjunction with the policy now being pursued further retrenchment in public expenditure is effected, we may hope for a gradual recovery of trade and industry.

In such circumstances, it will not be surprising if, measured in terms of gas sold, we shall not have made during the year covered by the report the progress which has characterized previous years; but I think we have cause to be thankful that the results achieved have been as good as they are. It is estimated that the sales of gas for the twelve months up to December last will be for all practical purposes the same as in the preceding year. Considering the financial stringency which, owing to bad trade, high

taxation and other causes, has prevailed during the period under review, this result is to be regarded as satisfactory.

The efficiency and economy, without which the Industry could never have reached its present position, has stood us in good stead in these difficult times. It is in such times that an Industry is tested to the uttermost, and that the greatest call is made upon the energy and skill of all engaged in it. To sit still and wait for the return of prosperity is a policy of despair; we must seek out and create new markets for the sale of gas and our other products. There is still a large field for the Industry to occupy. This is particularly true of the industrial sphere, and it is therefore with great satisfaction that I am able to report to you that considerable progress has been made in setting up Industrial Centres in various parts of the country for the purpose of promoting and encouraging large scale supply of gas for commercial and industrial purposes.

While it is appreciated that the existing legislative provisions handicap undertakers, and in many cases prevent the capture of many markets for the sale of gas, yet I would again like to repeat what I said last year and impress upon every member of the Council the importance of taking full advantage of the arrangements which are being made by the Industrial Centres. I do not think I shall be accused of exaggeration when I say that industry is watching this development of our activities with the greatest expectation and with the greatest interest.

It is also encouraging to note the increasing confidence and interest felt and taken in our Industry by the general public. The reputation of Gas Stocks as a safe investment was never higher. Even during the most critical period of the year fluctuations in value were trivial compared with those of other industries, and, in consequence, those undertakings which have sought fresh capital have been able to obtain it on reasonable terms. This is due, I think, to the sound policy which we have always pursued of conserving our financial resources—a policy which is serving us well in the present period of stress.

If we are to combat successfully the conditions which prevail, obviously there must be no relaxation of our efforts to develop and improve in every way we can the service we offer to the public, and past experience makes me feel confident that, so far as those efforts depend on ourselves, they will be made.

Legislative Restrictions.

At the same time, present-day conditions throw into high relief the urgent need for release from legislative restrictions, not only in the interest of all connected with the Industry—whether they be consumers, employers, or workers—but also in the interest of the country as a whole. It is fortunate, therefore, that the prospects of new legislation are, in my view, brighter than they have ever been in recent years.

As members are aware, a Departmental Committee has for over a year been considering the recommendations contained in the Second Report of the National Fuel and Power Committee with a view to reporting as to what amendments to existing Gas Legislation are desirable and necessary to give effect by general legislation or by Special Order to the recommendations contained in that Report. This Departmental Committee appointed two Sub-Committees—viz.,

(i.) To consider methods of charge; and
(ii.) Rationalization and finance.

Members will be glad to know that the Sub-Committee dealing with methods of charge have in recent months made very great progress, and I expect their report will be forthcoming shortly. Until the report is published I do not intend to indicate what the recommendations will be, but I am of opinion that they will be such that there will be no further excuse for the Government to delay introducing a bill in Parliament to give effect to the recommendations.

The Sub-Committee dealing with rationalization and finance have also made excellent progress, and an interim report recommending that gas undertakers should have the power of investing in the capital of other gas undertakers and any other companies carrying on similar operations to those carried on by gas undertakers has been published. This recommendation is of great importance, and when given effect to by legislation will go far to enable undertakings to carry out wider measures of rationalization which in many cases are so much needed.

You will have noticed that the Board of Trade have taken the somewhat unusual step of submitting the recommendation to a Joint Committee of both Houses of Parliament. The true inwardness of this move is not yet apparent, but it would appear that they were anxious to obtain a definite ruling from Parliament with regard to certain powers at present being sought in this regard through the medium of private Bills by individual undertakings. If that is the case it is not, from their point of view, unnatural that they should desire to have the recommendations contained in the interim report reviewed at the same time. The National Gas Council was, of course, represented throughout the inquiry by Counsel, and Mr. Ogilvie gave evidence strongly urging the need for early legislation.

Alternative Methods of Charge.

In the annual report of the Council which is now before you, reference is made to the increased recognition throughout the Industry of the need for power to introduce alternative methods of charge, and in view of the efforts which are being made—and successfully made—to increase the use of gas for industrial purposes, the granting of such powers by a law of general application is most urgent. The Departmental Committee will, therefore, render great service to the Industry if they place the Government in a position to introduce further amending legislation next session.

In this connection I would like to pay a tribute to the admirable services which have been rendered to the Industry by our representatives on the Departmental Committee—Mr. T. P. Ridley, and Mr. A. W. Smith, of Birmingham. Their wide experience and knowledge of our requirements; their untiring energy, and their unselfish sacrifice of valuable time—all of which were freely offered on our behalf—have been of inestimable value to us.

A favourable departmental report is not, however, as we know only too well, sufficient ground for optimism, for, unless it is acted upon, it is of little value. But here again, I think the prospects are brighter.

The President of the Board of Trade—and there is no one in the Government who has a greater understanding of the requirements of industry—has not only expressed himself as desirous of assisting industry, but has given ample evidence of his determination to do so. He has behind him, too, a House of Commons which has shown itself ready to give the fullest support to his proposals. Those of you who followed closely the debate in the House of Commons on the Kettering Gas Bill must have felt as I did that while the Bill dealt only with one of the difficulties with which some of our members have had to contend, a very liberal attitude of mind towards the Gas Industry generally was revealed in the House of Commons.

Moreover, at an earlier function, at which I had the opportunity of saying a few words to a number of Members of Parliament in regard to our aspirations and the obstacles to their realization, the speeches made showed clearly that a large body of sympathetic interests existed.

The Kettering Gas Bill has now, as you know, gone through all stages in the Commons and has been sent to the House of Lords. The success which has so far attended the passage of the Bill is most gratifying, because a very important principle—namely, the freedom of tenants of Council houses to select whatever forms of heat, light, and power they desire, and for which we have consistently fought—has been upheld. I hope that the confirmation of the Upper House to this Bill will soon be forthcoming. In the meantime, I desire on your behalf to congratulate the Kettering Gas Company on the stand which, with the assistance of the Council, they have made in the interests of the Industry in general, and to thank all those who rendered valuable services in facilitating the passage of the Bill.

The Gas Undertakings Bill.

Another Bill—the Gas Undertakings Bill—which proposed conferring upon gas undertakers certain powers of investment, was introduced in the House of Lords by Lord Bridgeman, and has passed through all its stages in that House. The ultimate fate of the Bill has necessarily become somewhat uncertain owing to the issue of the Departmental Report. It was introduced, however, at a time when it seemed unlikely that the Departmental Committee would be able to put forward any concrete proposals, and I mention it here only to draw attention to the fact that it was well received in the House of Lords, and met with no opposition there—a fact from which I think we can take encouragement. Granted a favourable report from the Joint Parliamentary Committee, I am hopeful that this Bill may become law before the end of this present session.

Good Cause for Self-Congratulation.

I do not propose to attempt to touch upon all the matters mentioned in the report, but looking upon it as a record of the Council's work for the past year, and realizing all that lies behind it, I venture to think that we have good cause for self-congratulation, not only upon the year's achievement, but upon the changes which have been effected and the progress which has been made in the fourteen years of our existence as a Council. While in the eyes of the law, under which each undertaking has its being, we are still no more than a series of isolated and self-contained units, we have, through the medium of the Council, and the other national bodies which are concerned with different aspects of our activities, gone far to get rid of the disadvantages of

the individualism which is part of our inheritance, and to ensure that its best elements shall be utilized for the common good. No one suggests that the fullest co-operation has yet been secured, or that our joint efforts have always borne the desired fruit, but a great deal has undoubtedly been accomplished, and as co-operation becomes more complete so will the Council become a more powerful and effective instrument, not only within the Industry but outside it.

Coal Mines Act.

I would like now to say a word in regard to the Coal Mines Act, and the action we are taking in view of the fact that Part I. automatically lapses at the end of this year. It appears probable that the Act will be re-enacted, but I hope it will be so modified as to afford some safeguard to public utility undertakings.

Owing to the existence of forward coal contracts the effects of the measure now in force have not so far been greatly felt, but there is no doubt that prices of coal for utilities are being substantially advanced in many instances in accordance with the policy advocated by the late Mr. William Graham in introducing the Bill. If, therefore, there is no modification of that policy, gas undertakings may in the future have to face an increase in production costs.

A deputation representing the Conjoint Conference of Public Utility Associations has accordingly seen the Secretary for Mines, and pointed out to him that the policy of discriminating in the matter of price between public utilities and other classes of consumers to the detriment of the former was prejudicial not only to their interests and those of the public, but also eventually to the interests of the coal industry itself, for the result must be to give to oil an advantage which, as an imported fuel, it should not be allowed to obtain in a coal-producing country.

Other objections to the Act from the point of view of the Gas Industry were also pointed out, and in particular that its quota provisions have seriously interfered in some cases with regular and adequate supply of the particular classes of coal required for gas-making. The matter is being actively pursued, and when the Government's proposals in regard to legislation are known all possible steps will be taken by the Conference to secure safeguards for the interests which they represent.

Oil.

Time does not permit of my dealing with other matters in which we are interested, but I should like to mention the matter of oil. I feel very strongly that this country must be warned, very seriously, against going in for oil as the fuel of the future. By such an action as this not only would the coal industry suffer but the railways, which are also one of the great industries of the country. It is time to call a halt with regard to oil, and I was extremely interested to see that Dr. Dunstan addressing the Coal Trade Luncheon Club the other day mentioned that his Chairman, no less a person than Sir John Cadman, held the opinion that the best way to counteract oil was through gas. Coming from such a quarter, that statement was very impressive, and I do hope that we in the Gas Industry will lay this to heart and realize that if oil is to be kept out of this country we have to get busy. The modern industrialist does not wish to bother about raw material; he does not wish to trouble about handling dirt and ashes or even the storage tank necessary for oil. He wants something that is automatic and easily controlled, and we have the ideal thing in gas, which can be kept completely under control thermostatically. In this connection, electricity is not so much in the picture because of its cost. Therefore, I hope everyone in the Gas Industry will do his best to see that we hold this field.

In conclusion, I would like to emphasize once again the importance both of individual effort and of co-operation. Never in the history of the Industry has there been a time when there was a greater call upon individuals for constant endeavour in every branch of their activities, and never has close and loyal co-operation in furthering the interests of the Industry as a whole been more vitally necessary.

I now beg formally to move the adoption of the report.

Mr. William Cash, in seconding the adoption of the report and accounts, said he would first like to mention two things which the President had touched upon. The first was gas as an investment. He felt, with the President, that it was very encouraging how the value of gas as an investment had steadily improved during the last few months; that was due to two or three facts, and one was that the investing public were beginning to realize at last that the Industry stands on a sound financial basis and also on a sound commercial basis. The second matter he wished to touch upon was output. The President had mentioned that some in the Industry were a little exercised because the output was either stationary or was not progressing rapidly, and he himself ventured to suggest that this was due to two causes, one being that the ordinary consumer and even the prepayment consumer at this particular juncture was economizing, and definitely attempting to save money by using less gas—not because of dissatisfaction, but because of his financial position. In the second place he believed a certain amount of the reduction in gas consumption was due to the fact that the Industry during the last few years had been supplying improved appliances—*i.e.*, appliances which were more economical and were better designed and used less gas. This, however, in his opinion was the right policy, and one which would bear fruit ultimately.

Mr. Cash then dealt with the various items in the accounts, and explained the reasons for additions and decreases as compared with the previous year.

Alderman Sir William Kay supported the motion for the adoption of the report and accounts, and it was carried unanimously.

Election of President.

Mr. Frank H. Jones, proposing the election of Sir David Milne-Watson, said Sir David had been practically the only President the Council had had since its inception, and he hoped that when the members again unanimously re-elected Sir David they would give him a special cheer in acknowledgment of the work he had done for them. Notwithstanding that Sir David was a very busy man, he had devoted a tremendous amount of time to the work of the Council. Continuing, Mr. Jones said he wished specially to endorse what the President had said with regard to oil. It was not right that gas business should be lost through the importation of oil, which was also doing harm to the biggest industry in this country next to agriculture—the coal industry.

Alderman J. H. Lloyd, who seconded the re-election of Sir David Milne-Watson as President, said that, while the Industry must be thankful that he had been willing again to act in that position, it appreciated him not only for the work he had already done, but because of his great influence in the Industry and in Government circles also.

The motion was carried with acclamation.

Sir David Milne-Watson, acknowledging the manner in which he had been re-elected, said he regarded it as a very great honour indeed to be able to serve the Industry as President of the National Gas Council. It had been a most interesting experience, and with the support of the members he looked forward to great progress in the Industry.

Honorary Officers.

Dr. E. W. Smith then proposed the following elections:

Hon. Treasurer.—Alderman Sir William Kay.

Trustees.—Alderman Sir H. Wade Deacon; Alderman J. H. Lloyd.

Hon. Secretaries.—Sir Francis Goodenough; Mr. W. E. Price.

Auditor.—Mr. A. Morland.

Dr. Smith added that everyone would wish to congratulate Alderman Lloyd on the honour that had been recently conferred upon him by the City of Birmingham in making him a Freeman of the City together with Mr. Chamberlain and Mr. Barrow Cadbury. Personally he had the greatest pleasure in mentioning this, because Alderman Lloyd was one of his old chiefs; he was a man who was loved by all with whom he came in contact. The honour that had been done him by the City of Birmingham must be regarded as reflected glory on the Gas Industry. It was interesting and significant that the beautiful casket that was presented to him on that occasion had the design on one end of it of a gasholder.

Lieut.-Col. W. H. Woodall seconded the motion for the election of the Honorary Officers.

The motion was carried unanimously.

Votes of Thanks.

The President, in proposing a vote of thanks to the Chairmen and Secretaries of the District Executive Boards, said that, unless the work in the Districts was carried out effectively, the Council itself could not function. He had never believed in an autocratic governing of things at a distant office, and the fact that there had been founded in the Provinces such efficient District Committees and Chairmen and Secretaries was largely responsible for the efficiency with which the Council functioned. These Committees did an immense amount of work for the Industry in many difficult circumstances, and for this reason he asked for a very hearty vote of thanks to them.

Mr. John E. Daw, seconding the proposal, said he knew how much the success of the National Gas Council depended on the interest that was taken in the work by the District Committees. He could speak feelingly as to the large amount of work that was essential in such a connection, because he had been Secretary for twenty years of a legal

Association which had jurisdiction over England and Wales, and the difficulty was to make the people in the districts feel that their interest in the Association was essential to the work that was being carried on in other quarters. Therefore, he hoped that the District Chairmen and District Secretaries of the National Gas Council would feel that the work they were doing was essential to the well-being and success of the Council, and that their efforts were fully appreciated.

Mr. T. P. RIDLEY, acknowledging the vote of thanks on behalf of the Chairmen, said it was very much appreciated and would encourage all the District Committees to give of their best for the Council. During the past year, perhaps, their labours had not been very heavy, but we were living in difficult times, and we did not know how soon we might get into troubled waters. Some people were optimistic, and thought we were already on the road to making steady progress towards emerging with success, but others believed that there would be considerable trouble before the present year was out. Whatever happened, however, the District Executive Boards would put their shoulders to the wheel and do their utmost in helping the Gas Industry through whatever troubles there might be.

Mr. W. CLARK JACKSON, who acknowledged the vote of thanks on behalf of the District Secretaries, said it was a pleasure to work in the districts on behalf of the Council because they were so heartily supported from London in everything they did. The District Committees would go forward with confidence because that support from headquarters was the means of much education to those in the districts on general business, legal, and other matters.

The PRESIDENT proposed a cordial vote of thanks to the Finance and other Committees of the Council. The Council, he said, had a very large number of Committees, all of which did useful work. They were an integral part of the organization, and without them very little progress would be made.

Alderman F. S. SADLER (Middlesbrough) seconded the vote of thanks in a humorous speech, and expressed special thanks to Mr. Charles Botley, who is dealing with gas charges, and said he quite appreciated the difficulties Mr. Botley was experiencing, because in Middlesbrough they were at the moment making some changes.

Sir FRANCIS GOODENOUGH, in the absence of Mr. Charles F. Botley, acknowledged the vote of thanks.

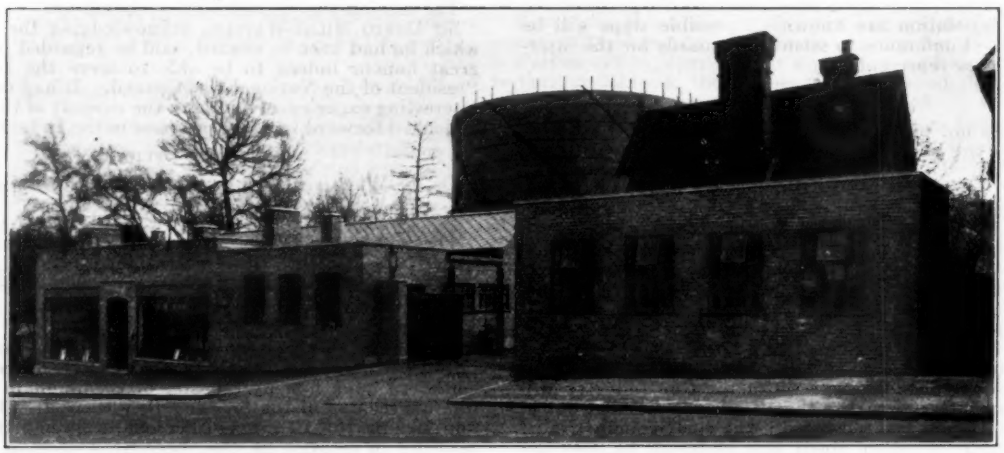
The PRESIDENT moved a vote of thanks to the staff, particularly, mentioning Mr. Ogilvie, Mr. Fottrell, and Mr. Smith, also including all the staff who worked so assiduously for the Council.

Mr. E. J. FOTTRELL acknowledging the vote of thanks, said there was little doubt that the enthusiasm of the staff made up for what they lacked in numbers.

Mr. SMITH, who also replied, expressed the deep appreciation of the staff.

NEW GAS SHOWROOMS : : AT OXTED : :

Croydon Gas Company's Latest Enterprise in Newly Acquired District



EXTERIOR VIEW OF THE OXTED SHOWROOMS OF THE CROYDON GAS COMPANY.

Following closely upon the very fine gas exhibition which the Croydon Gas Company held recently in their newly acquired district of Oxted (referred to at the time in these columns), they have now opened attractive and commodious new showrooms, stores, and workshops in a prominent position on the main thoroughfare of the town at the entrance of the Oxted Gas-Works and adjoining the original small showroom premises—which latter have now been converted into the Gas Referees' Official Testing Station.

The building, which has an overall frontage on the street of some 70 ft., is constructed of rough red brick, with the Company's name in stainless steel lettering above the main windows. Above the façade is a row of five 7-light "Rochester" lamps operated by a common control cock. As will be seen from the accompanying illustrations, a large window space has been obtained—of the open variety generally adopted by the Croydon Company—and measuring about 15 ft. in length by 9 ft. high.

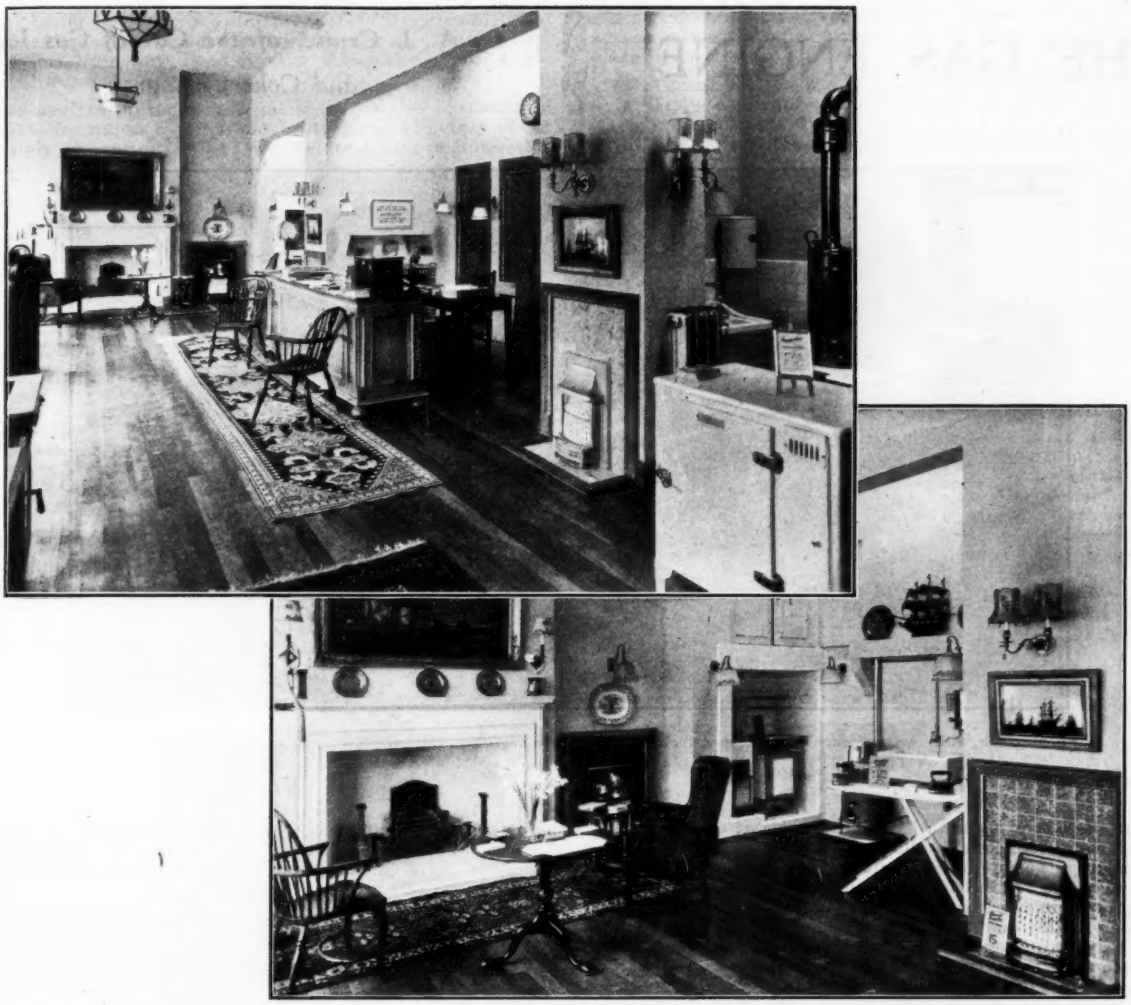
As one enters the showroom from the street, a pleasing atmosphere of domesticity is noticeable, while a lofty interior (14 ft. high) in a colour scheme of primrose and apple green, in addition to one or two antique pieces of furniture, pewter ware, a few old pictures, and a tongued and grooved flooring in polished Australian Jarrah wood, imparting a warm effect, adds to the general appearance.

Opposite the main entrance is the inquiry counter, on either side of which are recessed bays containing kitchen and bathroom settings respectively. In the former is a model all-gas kitchen, complete with "New World" cooker, Potterton "Emperor" gas boiler, sink supplied by an "Ascot" heater, a "Metro" dish warmer, which comprises a polished metal tray, with handles, which is kept at a sufficient temperature to maintain the dishes in a warm condition by means of very small by-pass gas jets diffusing heat below the tray. In addition, there are in this section gas irons, a copper in mottled enamel finish, and an alternative kitchen setting of cooker with coke boiler in mottled finish alongside, complete with gas poker attachment.

In the bathroom section is a variety of water heating appliances, including "Equator" and "Sunhot" storage heaters, "Ascot" multi-point, "White Chief" and "Reliance" geysers, and an exceedingly attractive little lavatory basin heater called the "Fox," which is manufactured by the Fox Water Heater Company, Ltd., of London, and which includes a powerful spray on the end of a rubber pipe.

HEATING SECTION.

In the heating line one finds a very wide range of appliances, all in attractive finishes and appropriate surrounds of coloured tiles or black marble. At one end of the showroom is a fine stone fireplace setting containing a basket coke fire. In front of buttresses either side of the



TWO INTERIOR VIEWS OF THE NEW OXTED SHOWROOMS, SHOWING THE BRIGHT AND ATTRACTIVE APPEARANCE OF THE FURNISHING AND APPARATUS DISPLAYED.

counter, and separating it from the individual kitchen and bathroom sections, are gas fires in coloured finishes connected to " Nautilus " flues, while a large number of other gas fires give the consumer a wide choice from which to make a selection. Graded coke for domestic purposes, supplied mainly from the local gas-works, is shown in the window, while radiators in gilt finish also find their place in the showroom.

An equally wide variety of gas cookers shows how the Company cater for their consumers' cooking requirements, and from the high-grade " Queensway " range in its tiled recess down to the smaller appliances, all are in attractive finishes and are displayed in such a way as to strike the eye and enable a suitable choice to be made. No kitchen is complete to-day without its refrigerator, and, needless to say, a gas-operated model is prominently displayed here in working order, while among other appliances is the " Dean " washing machine fitted with the " Acme " wringer.

For a small showroom—though the Oxted premises by no means give the impression of being small, so well are the appliances arranged—an excellent feature is the number of appliances actually in operation, so that consumers may come in and see almost any piece of apparatus they fancy under working conditions.

Excellent Lighting.

The lighting of the showroom is worthy of special mention, there being a wide variety of beautiful fittings. The main interior illumination is carried out by means of two Sugg's " Kingsway " lamps suspended from the roof, with a " Grand " coloured panel fitting, by the same firm, in the centre—all controlled by distance switches. Supplementary lighting is effected by means of a series of modern panel pendant, bracket, and standard fittings, a number of plugs and bayonet fixtures being arranged at intervals round the skirting board to enable the fittings to be displayed at various points of vantage in the showroom. Some very fine examples of candle bracket fittings are displayed, while an interesting point in connection with the lighting of the bathroom section is that the distance control is here operated by the " Newbridge " positive method with flush wall plate switch in white enamel finish.

Behind the showrooms are spacious stores, with fitters' workshops below, approached either from the showroom or through the extensive yard alongside, access to which is gained from the street by large double gates, on either side of which are " Rochester " cradle lamps mounted on brick pillars.

The stores, measuring over 50 ft. in length, are bright and airy, and are equipped with no fewer than 274 bins for miscellaneous stores, reinforced barrel racks, and accommodation for 50 odd gas meters. The other side of a metal-topped counter is the fitters' serving lobby, while adjoining is the inspectors' office, with lifting window and counter also connecting with the lobby. Beneath the stores is the fitters' workshop, immediate provision being made for a dozen men.

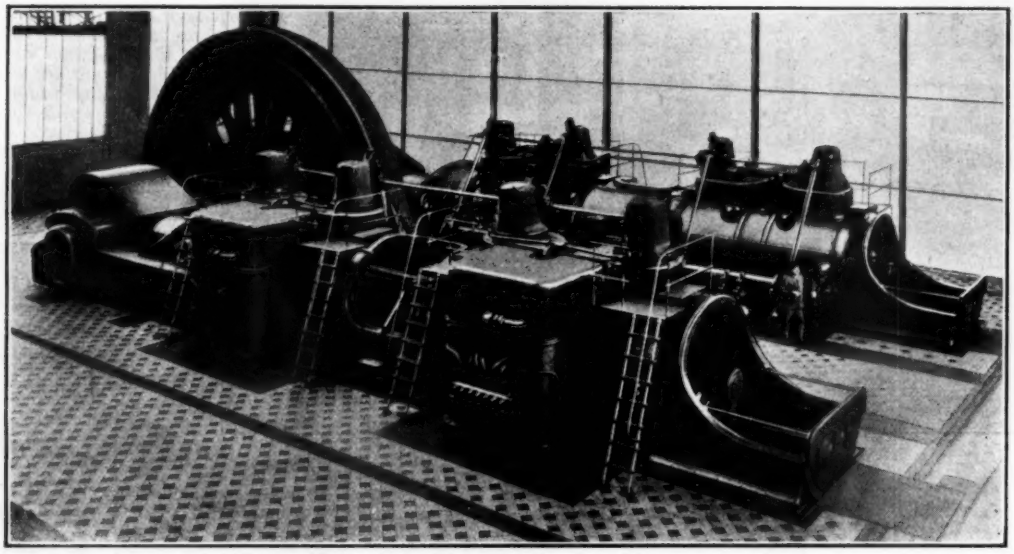
Though there is at present no upper storey to the building, provision has been made for superimposing a district inspector's residence above if this should become necessary in the future.

The architect responsible for the design of the premises was Mr. A. Douglas Robinson, A.R.I.B.A., of 104, Queen Victoria Street, E.C. 4, while the contractor was George Price, of Bishopsgate, E.C. Some difficulty was found in regard to the foundations of the building, owing to shifting sand, and it was necessary to sink piles 40 ft. deep to obtain firm support.

The Oxted and Limpsfield districts, which these new showrooms serve, are rapidly growing areas, and it is anticipated that this acquisition to the district from the sales and service points of view will help substantially in increasing the consumption of gas above the present 40 millions per annum, and the Croydon Gas Company are to be congratulated on their far-sighted policy.

THE GAS ENGINE*

By A. J. Cruise, of the Cardiff Gas Light and Coke Company



Our photograph, which we reproduce by courtesy of the Maschinenfabrik Augsburg-Nürnberg A.G., is of a Standard M.A.N. Gas Engine, Type D.T.Z. 15; 10,000 b.h.p. (Vereinigte Stahlwerke A.G. Huette Ruhrort-Meiderich).

The use of town gas in gas engines was at one time very popular and economical, but the introduction of the electric motor, together with the remarkable strides made in the efficiency and reliability of the diesel and heavy oil engines, appears to have retarded the expansion of the use of gas engines in this country.

The introduction of the "grid" scheme for the supply of cheap power to the domestic and industrial users of the country by installing super-power generating stations working at high thermal efficiencies and distributing power over large areas was believed to be the means of lowering the production costs in many industries and of raising the efficiency of power production in the country generally.

It is evident, on considering the problem closely, however, that several considerations of both commercial and technical importance cannot be entirely neglected in connection with the tendency of concentration of the power resources of a country.

The following points will serve to indicate this:

(1) There is bound to be a definite limit over which the initial costs per kilowatt installed cannot be further reduced by increasing the capacity of a power house.

(2) There is a limit beyond which the operating costs per kilowatt hour generated cannot be reduced further by any increase in the output of individual turbine and boiler units.

(3) The costs of distributing the power exceed the cost of production by a considerable extent for two reasons. First, the capital invested per kilowatt installed in a "grid" scheme exceeds the initial costs of the power plants, and, secondly, distribution costs become excessive when areas of little industrial activity have to be supplied.

(4) The average works using its own power plant usually works at a much higher overall efficiency than the large power stations. For instance, plants using steam for process work are in a position to produce their electricity from pass-out or back-pressure turbines, and employ the rest of the steam in various processes, thus considerably increasing the overall efficiency of the plant.

(5) There is a far more serious risk of breakdowns due to atmospheric or mechanical troubles.

It is obvious, after considering these points, that the economy of the electricity supply could be materially increased by dividing the total load of a station as follows:

(*a*) A practically constant base load reserved for the super-power plants and "grid" distribution, and

(*b*) A temporary peak load, produced by special power plants as near as possible to the centre of consumption, which could act as emergency sets.

This would give the base load plants a high "load factor—*i.e.*,

$$\frac{\text{Units generated per annum}}{\text{Installed capacity of the prime movers} \times 365 \times 24}$$

This would raise the efficiency of the station and of the grid generally.

The operating conditions of the peak loads sets would be characterized by—

(1) Low initial costs per kilowatt installed.

(2) Permanent readiness for immediate service without time and fuel wasting preliminaries.

(3) Quick and prompt starting in all cases of necessity.

(4) Flexibility regarding facility of installation at any place, easy operation, and perfect control.

It is obvious that for these peak-load purposes high-powered gas engines run on coke oven or town gas at special rates would give all the above conditions and have the advantage that no large fuel storage would be required. Also, apart from working at practically maximum output, they have an intrinsic higher thermal efficiency than steam turbines.

Several installations have been put into commission in the Ruhr district in Germany, both for electricity generation and for boosting coke oven gas in the gas-grid system.

Some interesting points about these engines (in addition to the large horse-powers being installed there—some engines being built in single units up to 10,000 B.H.P.) are:

(1) They usually conform to a standard type—viz., 4-stroke double-acting tandem and twin-tandem sets.

(2) Instead of strong springs formerly applied for closing the admission and exhaust valves, compressed air operated pistons control the valves. The air compressor for this purpose is attached at the end of the auxiliary gear shaft at the front end of the engine.

(3) The governor controls the speed of the engine by a servo-motor gear with oil transmission and with a very simple and reliable arrangement of the admission valve control.

(4) The exhaust piping is lagged internally and externally with fireproof bricks to prevent corrosion by the hot gases and losses of heat before the exhaust gases enter the waste-heat recuperator.

* From a paper before the Graduate Section of the Institution of Chemical Engineers.

(5) The recuperator is a steam superheater, a tubular boiler, and a feed water preheater through which the exhaust gases pass in this sequence. This design has been developed by the Maschinenfabrik Augsburg-Nurnberg, A.G.

The modern high-powered gas engine is also particularly suitable for use as a prime mover in chemical plants where a supply of heat either as low-pressure steam or hot water is required for process work. The advances made in gas engine construction have, excluding those relating to the actual mixing of the gas and air for combustion, taken place in three ways:

(1) The utilization of the heat of the exhaust gases.
(2) The use of supercharging and scavenging to increase the efficiency.
(3) The utilization of steam from the cooling water.

STAGING AN ACCIDENT

South Metropolitan Gas Company's First Aid Competition

Realistic settings to accidents were staged for the benefit of co-partners taking part in the South Metropolitan Gas Company's Annual First Aid Competition for the "Good Samaritan" Trophy, held at the Institute, Vauxhall Works, on Tuesday, May 10. The accidents depicted might well have been taken from the everyday life of a co-partner.

The Trophy, which is a model in plaster, illustrating the parable of the Good Samaritan, has been contested for since 1903 by representative teams from the various Works and Departments of the Company. This year nineteen teams entered, and after a preliminary test eight teams qualified for the final. Each team is tested individually and collectively. The trophy is awarded for one year to the team obtaining the highest number of marks, and each member receives a bronze medallion.

The tests set by the Judges were:

Team.—Four first-aiders are on their way to the ambulance room when they see some scaffolding give way and a workman on it thrown to the ground. The weather is fine and warm. First aid to be rendered in 18 minutes. No other help allowed. (Injury, fractured left clavicle, fractured sternum, and cut over left eye-brow.)

Individual.—*Nos.* 1 *and* 2 are watching a gymnastic display on the parallel bars. The man slips and falls on his outstretched right hand. There is a first aid box in the dressing room. First aid to be rendered in 8 minutes. (Injury, cut hand and fractured clavicle.)

Nos. 3 *and* 5 are watching a gymnastic display on the horse, and see a man slip and make a violent but unavailing effort to save himself from falling. He lies on the floor complaining of great pain in the region of the left knee. There is a first aid box in the dressing room. First aid to be rendered in 8 minutes. (Injury, fractured patella.)

No. 4 was asked the following questions:

(1) What is epilepsy?
(2) What are the signs and symptoms?
(3) What is the special treatment

The winners of the Competition were District Outdoor, Norman Road, with the Clerical Staff (Headquarters) second, and the Women Employees third.

COAL ASSAYS

Mr. Harald Nielsen describes his modification of the Fischer Apparatus

A considerable number of assay methods or methods for the determination of the solid and liquid constituents of coal have been evolved of recent years. One of the most widely known and used in this country is that evolved by T. Gray and J. G. King, of the Fuel Research Board. Particulars of this method were given in Technical Paper No. 1 of 1921, and Technical Paper No. 21 of 1928. Illustration No. 2 in this latter paper gives a general idea of the outfit required. In this apparatus, however, a charge of only about 20 grammes of coal is dealt with, and working on such small quantities the margin of error must not be overlooked. Although accurate determinations can be made by skilled operators, it will be readily understood that with such small quantities the determination of oil and liquor separately is somewhat tricky.

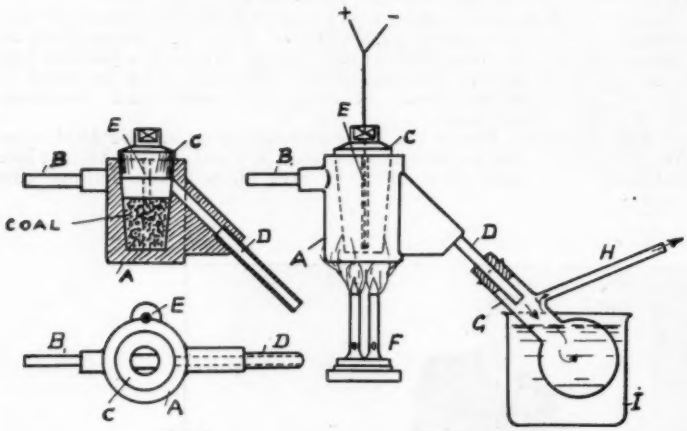


Fig. 1.

Fig. 2.

Description of Fischer Assay Apparatus.

A. Body of Fischer aluminium retort.
B. Rod for supporting clamps.
C. Conical fitted aluminium plug.
D. Outlet tube from retort.
E. Boring in retort body for pyrometer or thermometer pocket.
F. Multiple bunsen burner or gas ring.
G. Glass receiver.
H. Outlet from glass receiver for conducting non-condensable gases to gasholders or meters.
I. Beaker containing cold water, ice and salt mixture, or liquid air.

Personally I have always favoured apparatus where larger quantities of coal can be dealt with, such as, for instance, the assay method devised by Prof. Franz Fischer, of the Kaiser Wilhelm Institut, Mulheim. This method, which is extensively used, particularly on the Continent, as a standard method of determination, is illustrated in figs. 1 and 2.

Fig. 1 shows the retort itself, which is made from aluminium, having very thick walls, so as to ensure that the temperature everywhere in the retort is the same within practical limits. The Fischer assay retorts are made in three sizes, 50, 100, and 200 grammes. The retort is provided with a conical, tight-fitting lid, but after it has been in use for some little time it is difficult to get absolute gas-tightness, and when dealing with a strongly swelling coal I have found on a number of occasions that the coal virtually lifts the lid, thereby spoiling the complete assay.

Nevertheless, Fischer's assay method is neat, and the apparatus is cheap and easily manipulated; it gives the results with all the desired accuracy, and it is robust, and from these points of view it has much in its favour. Having conducted many hundreds of assays with the Fischer apparatus, and having from time to time been worried by its drawbacks, which are not to be laid at the door of the assay apparatus itself, but of the particular coal sample assayed, I have evolved a somewhat modified type which combines the simplicity and the general reliability of the Fischer apparatus with absolute certainty of results when dealing with a swelling coal.

The modified retort, as will be seen from fig. 3, plan view and elevation, comprises a retort made from a solid block of mild steel. This square block has a conical boring and is provided with a central bolt, by which the lid or top can be tightly screwed down to the retort body. This bolt has a conical sleeve with a number of perforations, to ensure a quick passage of gas from the various parts of the coal charge towards the centre. A coal charge of generally 100 to 150 grammes is placed in the annular space thus formed. In two places the retort body has thermometer or pyrometer pockets, and a thermometer pocket is also provided by boring a long hole through the centre of the bolt, so that it is possible by means of pyrometers or high-temperature thermometers to ensure that the temperature of the retort is even all round, as well as in the centre.

The heating is effected by placing the retort body direct on a suitable gas ring, and to protect it from any radiation the retort is surrounded by an asbestos jacket, as will be seen from fig. 4, where the retort is shown linked up to the condensing plant.

The gas offtake from the retort is a ⅜-in. bore steel or iron pipe, joined at an angle of about 45° to the retort body, to ensure that all condensates can be run off into the receiver, which is of a special form (see fig. 5). This receiver may be surrounded by a water jacket in the form of a glass beaker or a similar vessel, so that, at will, the receiver can be cooled or warmed and maintained at the temperature desired. Most condensates in the form of liquor or oil run straight from the retort into this receiver, where the various volumes can be read off at the desired temperature intervals. The uncondensed vapours and gases travel through a 2 ft. Liebig reflux condenser made from glass, and thence along a main through a 3-way tap, the **T**-branch of which is joined to a continuous gas sampling pipette. On this gas main is also a pressure gauge, preferably filled with mercury, and finally the main leads to a gas storage bottle. I have found that a capacity of 5 to 10 litres is ample gas storage for a sample of coal up to 100 grammes. Two or more bottles, if so desired, can be joined up in parallel, to give any desired gas storage capacity.

The method of operation is the following. The sample of coal to be assayed is crushed so that all particles pass a ⅛-in. screen. A sample of this coal is, of course, kept for analysis, and from 100 to 150 grammes is placed inside the retort. Heating is now commenced at the rate of 10° per minute, until the temperature of the retort body is approximately 350° C. Afterwards the heating proceeds at the rate of 6° to 8° per minute until a temperature of about 450° has been reached, and after that 5° per minute will be found advantageous. For the last fifteen minutes the retort is maintained at the maximum temperature for ordinary low-temperature assays of coal of, say, 500° C.

Every five minutes a complete set of observations is taken—temperature readings, volumes of oil and liquor, and gas volume given off—and after completion of the distillation, which generally takes 90 to 100 minutes, these readings may be plotted into curves, which will give a graphical picture of the whole distillation procedure. The heating curve can with a small amount of experience be made absolutely standard for any coal, so that any variations in gas evolution become apparent and would form the basis for further investigation if this should be desired.

Fig. 6 shows a set of distillation curves, of which Curve I. is the temperature *v.* time curve, and Curve II. is the gas evolution curve, expressed in c.c., *v.* time. Fig. 7 shows the gas evolution in c.c. per minute during the stages of the distillation, and it will be seen that after gas evolution has commenced this drops gradually, indicating that adsorbed gases have been expelled. Then there is a steep rise, until the maximum gas evolution is observed after a period of 50 to 60 minutes. This curve will vary somewhat with the nature of the coal. After 60 minutes' distillation there is an equally rapid fall, until the gas evolution after 90 minutes is very slight. At the same time, observing the colour of the gas through the glass receiver, we note that the maximum gas evolution is synonymous with the biggest oil yield and a thick greenish gas, and after evolution decreases the gas becomes of less and less density in colour, until towards the end it is perfectly colourless.

The receiver for the oil and liquor is tared and, after completion of the test, is again weighed with its contents. That gives us the total weight of the condensable products. Afterwards, in order to determine the exact amount of liquor present, the receiver is washed out with, say, 100 c.c. of xylenol, and the water determined by the usual xylenol method. Having weighed the coke, the liquor, and the oil, and measured the gas volume at the atmospheric tem-

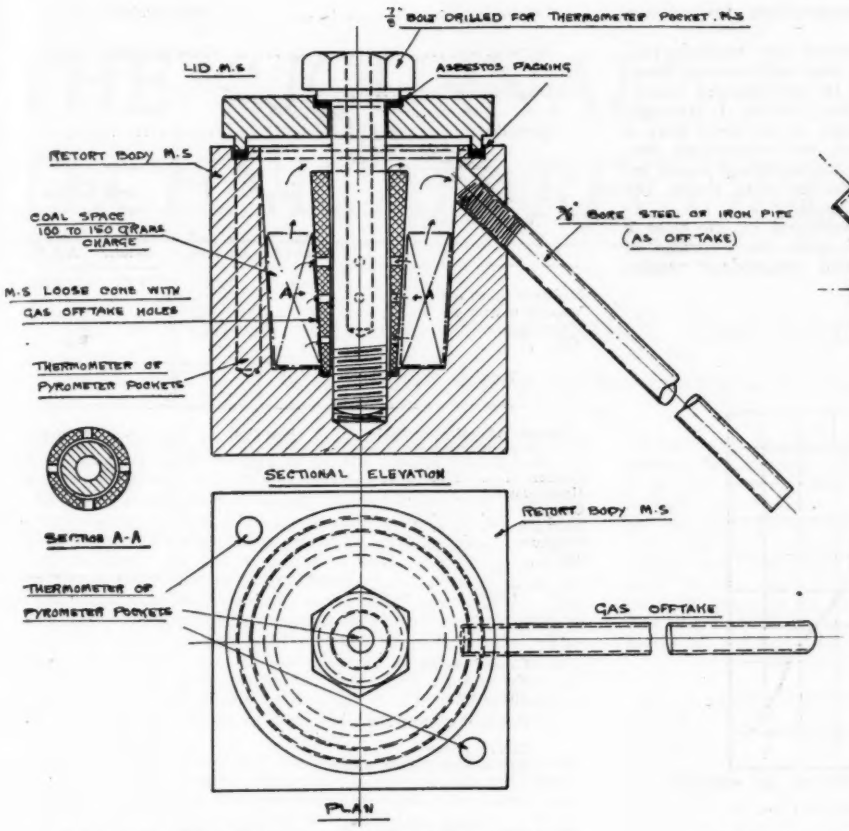

7/8" BOLT DRILLED FOR THERMOMETER POCKET. M.S
LID M.S
ASBESTOS PACKING
RETORT BODY M.S
COAL SPACE 100 TO 150 GRAMS CHARGE
1/2" BORE STEEL OR IRON PIPE (AS OFF TAKE)
M.S LOOSE CONE WITH GAS OFF TAKE HOLES
THERMOMETER OR PYROMETER POCKETS
SECTIONAL ELEVATION
SECTION A-A
RETORT BODY M.S
THERMOMETER OR PYROMETER POCKETS
GAS OFFTAKE
PLAN

Fig. 3.—Nielsen's Modified Fischer Retort for Temperatures up to 650° C.

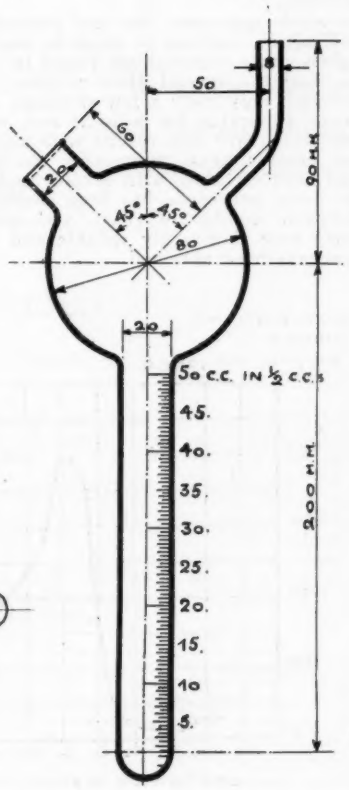


Fig. 5.—Standard Glass Receiver (Nielsen's Modified Fischer Assay Apparatus).

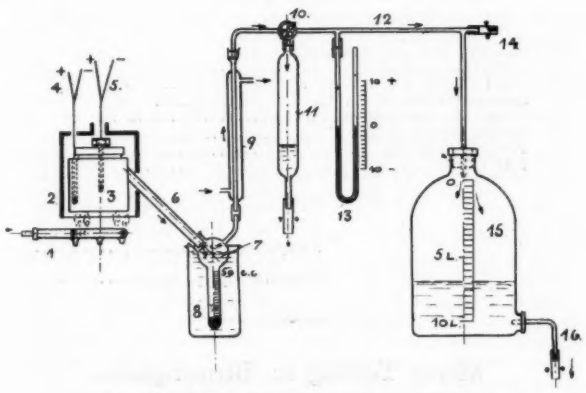


Fig. 4.—Nielsen's Modified Fischer Assay Apparatus.

1. Gas ring burner.
2. Asbestos shield.
3. Modified steel assay apparatus or retort, 100-150 grammes capacity.
4. } Pyrometers.
5. }
6. Gas and liquid outlet for assay retort.
7. Graduated glass receiver.
8. Beaker containing cooling liquid for glass receiver.
9. Liebig condenser (24 in.)
10. 3-way cock.
11. Continuous gas sampling pipette with rubber tubing and pinch cocks.
12. Permanent gas main.
13. Pressure gauge, water filled.
14. Emergency gas outlet, provided with rubber tubing and pinch cock.
15. Gas receiving bottle, capacity 10 litres (or in lieu of a 10 litre bottle, two 5 litre bottles may be used, kept in parallel with 12).
16. Acidulated water outlet.

NOTE.—The liquid in the gas container or receiver 15 may be either acidulated water or gas saturated water or brine.

perature and pressure prevailing during the test, we are in a position to draw up a complete weight balance, and I have generally found that weight balances can be arrived at by direct observation to within 0·1 to 0·2 of 1 p.ct.

This assay method, when the results are properly tabulated in the form indicated, gives an excellent picture of the characteristics of a particular coal sample, and will constitute a valuable record of the behaviour of the coal for comparative purposes. All the technical data which are generally required are embodied in the forms, and by keeping strictly to standard procedure it is possible always to obtain concordant results. I have found in actual practice that an assay method such as the one outlined gives a considerable amount of valuable information, which enables one to form an idea of the suitability and the value of a particular coal for the purpose in view, be it high or low temperature distillation.

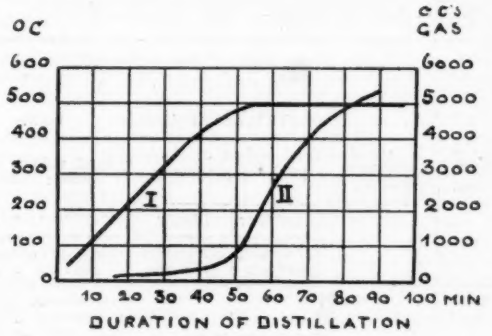


Fig. 6.

Furthermore, by selecting an assay retort of the type here described, a coke lump will be produced which serves as an excellent indication of what the coke would be like from larger scale operations; it enables coke samples to be obtained for the determination of density, and the hardness of the coke can be tested by a method described by me in the "JOURNAL" for April 13, p. 82. Samples of oil, gas, and liquor are obtained in sufficient quantities to enable the most essential determinations to be made, and the margin of error will only be slight—so slight that for all practical purposes it is non-existent.

If it is a question of ascertaining how coal would behave at still higher temperatures than about 500° to 600° C., the retort can be constructed from heat-resisting steel, which will stand temperatures up to 900° C., only, of course, the gas storage bottles must either be increased in number or must be substituted by a gas meter. In addition, the heating arrangements of the retort will have, naturally, to be modified by the retort being enclosed

in a suitable muffle so that the temperature desired can be obtained.

The whole apparatus does not present any manufacturing difficulties, and can be made by any engineering shop. The glass parts required are found in laboratories everywhere, and the special glass receiver, which I strongly recommend, only costs a few shillings, so we have here a complete apparatus for a total cost not exceeding 50s. to 60s., which will give results with an accuracy equal to, if not greater than, apparatus costing ten times the amount, and certainly with greater facility.

This assay procedure has been employed by me over a considerable number of years, and with the exercise of ordinary care thoroughly reliable and concordant results have always been obtained.

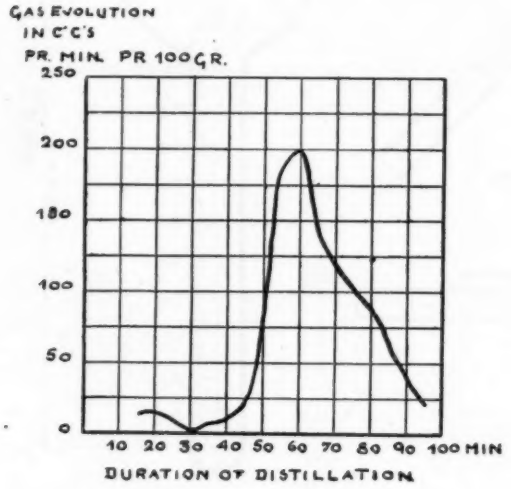


Fig. 7.

Laboratory No. ..... Date received .....

Name of coal ..... Date of assay .....

Origin of coal .....

Remarks .....

Time.	Pyrometer Reading: Retort Body °C.	Pyrometer Reading: Centre of Retort °C.	Measured Volume of Oil and Tar Produced. C.C.	Measured Volume of Liquor Produced. C.C.	Measured Gas Volume. Litres.	Pressure Gauge Reading: Mm. H_2O.	Remarks.

SOLIDS.		OIL, TAR, and LIQUOR.		GAS.
Weight of raw material, grammes.	Weight of solid residue, grammes.	Total weight of liquid produets, grammes.		Total volume produced: In litres . . . . In c.ft. . . . .
		Oil and Tar.	Liquor.	
		Net weight, grammes.	Net weight, grammes.	Temperature of gas . . . . .
Sieving test of raw coal.	P.Ct. of raw coal.			Barometric pressure . . . .
		Specific gravity at 15·5° C.	Specific gravity at 15·5° C.	Specific gravity . .
	Character of solid residue.			Calculated calorific value: B.Th.U./c.ft. . . Kg. cal./kg. . . .
		Tar acids, p.ct.	NH_3, p.ct.	
—	Cwt.	Galls.	Galls.	Cub.m. / C.Ft.
Products per ton of raw coal . .				

Weight balance, raw coal = 100:
P.Ct. Solid residue . . . . . .
,, Oil and tar . . . . . .
,, Liquor . . . . . .
,, Gas . . . . . .
,, Loss . . . . . .

Assayed by .....

Checked by .....

Laboratory No. ..... Date received .....

Name of coal ..... Date of assay .....

Origin of coal .....

Remarks .....

Proximate Analysis.	Raw Coal.		Solid Residue.	
	As Received.	Dry and Ash Free.	From Retort.	Dry and Ash Free.
	P.Ct.	P.Ct.	P.Ct.	P.Ct.
Moisture up to 105° C. . .				
Volatile matter				
Fixed carbon				
Ash				
Total				

Ultimate Analysis (Dry Basis),	Raw Coal.	Solid Residue.
	P.Ct.	P.Ct.
Carbon		
Hydrogen		
Oxygen		
Nitrogen		
Sulphur		
Ash		
Total		

Calorific value
Net hydrogen
Specific gravity
Carbon-hydrogen ratio $\frac{C}{H}$
Coking power
Appearance of coke button

Gas Analysis.	$CO_2 + H_2S$.	C_mH_n.	O_2.	CO.	H_2.	CH_4.	C_2H_6.	N_2.	Loss.

Calorific value, calculated, gross—
Kg. cals. per cub.m. .....
B.Th.U. per c.ft. .....
Specific gravity, air = 1 .....
Weight per cub.m. in kg. .....
Weight per c.ft. in lbs. .....
P.ct. combustibles .....
P.ct. inerts .....

Assayed by .....

Checked by .....

Meter Testing in Birmingham.

The annual report of Mr. F. Colburn, the official Inspector of Gas Meters, to the Birmingham City Justices' Gas Meter Testing Committee shows that the number of meters tested totalled 79,938, as against 82,272 last year; a decrease of 2334. The fees charged amounted to £4887, a decrease of £187. The expenditure for the year amounted to £3709, showing a credit balance of £1178, which has been passed to the general rate fund.

Statistical tables are appended, giving an analysis of the results of the testings; 2090 meters, or 2·6 p.ct., were rejected, as against 3·3 p.ct. last year. Of 3340 wet meters tested, 81, or 2·4 p.ct., were rejected; and of 76,598 dry meters tested 2009, or 2·6 p.ct., were incorrect.

Of the 2090 meters rejected, 688 were more than 2 p.ct. fast, 481 were more than 3 p.ct. slow, while 566 were rejected for unsoundness—*i.e.*, 159 external and 407 internal. The rejections for excessive absorption of pressure numbered 116, or 1·4 per 1000 of the total meters tested. Of 212 disputed meters submitted for re-verification and certification, 136, or 64·1 p.ct., were incorrect.

In the monthly summary of the meters tested, it is seen that of the total, 44,780 were of the standard and high capacity type. Repaired meters numbered 30,130, while 55,984 were pre-payment meters. The highest monthly percentage of rejections was 3·3, and the lowest 1·7.

During the year one 10 c.ft. and two 5 c.ft. standard test holders have been reconditioned and re-verified by the Board of Trade.

THE "JOURNAL" TECHNICAL RECORD

Which contains Reports of Meetings of Gas and Allied Associations

Sales Policy of a Small Gas Undertaking*

By J. CORRIGAN, Engineer and Manager, Penrith Gas Department

When the Secretary invited me to read a paper, I felt somewhat in a predicament as to the choice of subject. I assumed, however, that the invitation was extended to me as one who represents a small undertaking, and possibly because in recent years the business methods of our undertaking have met with some measure of success. As some members may not be acquainted with the character of Penrith, I may, at this juncture, explain that it is an agricultural market town of some 2700 consumers. The works have been recently reconstructed and extended, and the annual make of gas is at present 85 million c.ft. The load is practically all in domestic or business premises, there being very few industrial concerns in the area of supply. The undertaking is owned by the Urban District Council, and the town is supplied with electricity by a private company.

There has been recently a desire on the part of the Senior Gas Associations to give the small undertakings an opportunity of presenting their point of view, and while the technical aspects thus presented may have mainly a local interest, there are certain commercial points which appear to be common to all undertakings, large or small. I would, therefore, like to confine myself to a few considerations of sales policy, as they affect mainly the small works.

In the area covered by this Association there are many small undertakings, which may be divided into two categories. First, those who, by reason of their close proximity to either a larger undertaking or an alternative bulk gas supply, might find mutual advantage to both supplier and consumer in an amalgamation or absorption. On the other hand, there are many works where the possibilities of such amalgamations are, in the light of present day distribution, exceedingly remote, and who will have to shoulder the responsibility of gas supply for many years to come.

RESPONSIBILITIES OF SMALL UNDERTAKINGS.

It would be well to consider how the latter type of comparatively isolated units fit in the general scheme of gas supply. Many such undertakings do not realize that they are part and parcel of a National Industry, and as such have certain responsibilities. Some are apt to confine their thoughts within the orbit of their own sphere, and adopt a far too parochial outlook in their business dealings, with the result that they do not keep pace with the demands of modern conditions. If there is one outstanding feature of a really progressive large undertaking, it is surely that breadth of vision in its business methods which inspires the confidence of its own consumer, and redounds so much to the credit of the whole Industry.

Thus I consider that the foundation of any form of sales policy should be a right motive—an ability for the undertaking, however small, to appreciate its significance in the Industry and the extent of its power for good or evil. I may illustrate my point by quoting the hypothetical case of, say, a manufacturer having works situated in the area of a large undertaking, and his home within the area of a small one. Any deficiencies in the quality of service in his domestic life are soon made very obvious to him. If the same man later on has to consider the utilization of heat to any of his works processes he very often omits a consideration of the claims of gas, because his opinion of gas supply has been prejudiced at the outset. Here the offending undertaking has a dual responsibility of creating a dissatisfied consumer in its own area, and losing potential consumers to the larger works. On the other hand, I contend that a small undertaking which can establish good relations with its consumers, under difficulties inseparable with small works, is doing incalculable good to the Industry at large.

The aim of each undertaking, large or small, should be to increase its sales of gas, and more particularly to increase its average consumption per consumer. I suggest that this second point is a very important one to keep before us, for many undertakings have been carried away on the flood tide of increasing business due almost entirely to additional consumers. While this is very desirable, there have been many cases where due regard has not been paid to the retention and development of business with existing consumers, with the result that the cessation of housing and other development schemes has revealed considerable accumulated losses.

GOODWILL.

Undertakings necessarily differ in their methods of approach in business dealings with consumers, but each has one principle in common—namely, the development of the goodwill between consumer and supplier. Goodwill in business simply means the personal regard the buyer has for the seller, and *vice versa*. It is based essentially upon the amount of personal contact between the two, and I submit that this is where smaller undertakings potentially have a great advantage over the larger ones. I say potentially, because the ultimate success depends upon the ability of the executive of the smaller works to develop that personality and to take full measure of the advantages at his disposal.

The large undertaking endeavours to establish personal contact with its consumers through an organized chain, commencing with the executive down through the departmental channels to the consumer. Chains are as strong as their weakest links, and the longer the chain the greater the danger of some part of the organization breaking down. It calls for constant supervision of each link if the ultimate contact is to be made. The small works contact is made quicker—often the manager plays a personal part in the majority of business deals, and much of the success will depend upon his interpretation of the meaning of goodwill.

RELIABILITY.

How then can we develop this important characteristic of goodwill? The usual answer is "service;" but admirable though the word may be, I am afraid its use is so hackneyed that a great deal of its significance is being lost. One has experienced so many forms of good and bad service in various walks of life that there is a danger of the phrase becoming a mere parrot cry of lip service. To my mind, the word "reliability" expresses the atmosphere we want to create—that feeling of mutual reliance that complete satisfaction will be the outcome of every phase of business relations with our consumers.

The fundamental requirement of the consumer is a reliable supply of heat to efficient appliances day or night, for which he is prepared to pay a reasonable competitive price. How this is to be achieved by the supplier is no concern of the consumer; he simply wants satisfaction, and if he cannot get it from the gas undertaking then he will go to the competitor who claims to be able to give it. I think it should be fully realized that at least one effect of the adoption of the grid system of electrical supply will be to ensure a more reliable supply of electricity to certain places which in the past have had an indifferent supply.

The economics of prices is another matter, but my experience is that the average person prefers to pay a little more for an article that is more reliable in performance. We cannot assume that a cheap supply of gas will be sufficient to meet competition; it is, of course, a great advantage, but the deciding factor will be the reliability of supply. Any policy of sales development, therefore, must have as its basis a satisfactory supply, and this calls for an honest examination of the whole of our manufacturing and distribution systems to ensure meeting our consumers' requirements. Otherwise we are labouring under difficulties

* Paper before the North of England Gas Managers' Association, May 6.

which will seriously jeopardize the success of any sales effort.

Gas Lighting Policy.

Before discussing a general sales policy, I would like to refer briefly to the question of gas lighting as it affects the small undertaking. A gas lighting policy may differ from the general policy as it must necessarily be settled by each undertaking in view of the state of local conditions prevailing at the time; for, although every undertaking still has gas lighting, the load in some is negligible, while in others it is important. Generally speaking, however, small undertakings still retain a fair proportion of lighting load. Each undertaking must satisfy itself that its lighting consumers are being adequately and efficiently served at present. It may be that owing to certain local conditions the display of lighting appliances is not in the hands of the gas undertaking. Provided those suppliers are giving satisfaction to our consumers all is well, but this is very often not the case. It should be made clear that no matter how few or how many lighting consumers there may be, a gas undertaking has a duty to show and the consumers a right to be shown and offered the very latest developments in gas lighting; otherwise our competitor will step in without any opposition.

As the lighting conditions at Penrith may be typical of many small places, I would like to relate our experiences within the last four years. Previous to that, very little business was done by the Department in gas lighting except among slot consumers. There appeared to be the impression that either gas lighting was better left alone or that the consumers were being adequately served and satisfied. I decided to test the reaction upon consumers by arranging a special display of modern gas lighting at one of the cookery demonstrations. The main difference was that instead of hanging up in an apologetic manner a few dummy pendants with cheap globes attached, and calling it gas lighting, every pendant and bracket was connected up and the glassware, bowls, &c., changed daily. The stand became a centre of attraction, and it was decided to follow up this interest by developing our lighting sales to their full extent. In the October of each succeeding year, special exhibitions have been arranged, devoted primarily to gas lighting.

We show, of course, other selected appliances, but have no cookery demonstrations at these particular exhibitions, the idea being to focus the attention on winter requirements in lighting and heating. The exhibitions are held in a large Market Hall, the lighting stand occupying the centre of the floor, and during the last show I had 70 pendants connected up. The blaze of light was very striking and by constantly changing the glassware we were able to get return visits from the consumers. The office and fitters' staff provide the attendants, and it is arranged that each member has a turn of selling. I find this method gives encouragement and confidence, and creates that all-round enthusiasm which is so essential to the success of these little shows. At the same time, it is surprising how a change from working clothes will transform a workman, and develop his latent business abilities. I make a point of being in personal attendance practically the whole of the time.

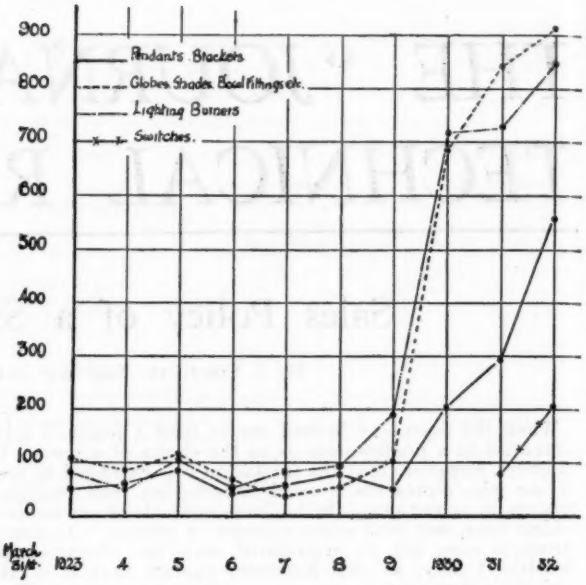
Another rather unorthodox method adopted is the opening of shop and stall in the Market Arcade every Saturday evening, attended by the fitters, where, cheek by jowl with greengrocers, sweet shops, &c., we display our wares, and the business done is very encouraging. After all, we are selling a domestic article—why not go literally into the market place with goods? Our idea has been to concentrate on popularizing the centre pendant with bowl fitting; the conversion of upright brackets, the carcassing of unlit bedrooms, sculleries, &c., and the installation of switches. For each of these we have literature printed giving fixed prices for a standard job. Order cards are arranged on the ballot vote form, and consumers mark their requirements with a cross.

Fig. 1 and Table 1 give the result of our experiences.

Table I.—*Sale of Gas Lighting Appliances.*

	£
Year ending March 31, 1928	40
,, ,, ,, 1929	52
,, ,, ,, 1930	181
,, ,, ,, 1931	350
,, ,, ,, 1932	462

The results shown have been very encouraging to us, but the main significance is that we have created quite a different atmosphere with our customers. Not only has it been a remunerative way of advertising, but we can say quite definitely that we find it easier to sell other appliances to a consumer who has had the lighting modernized. Gas lighting is admittedly our weakest link, to retain the business requires a greater effort than does the extending of other branches of supply.



GAS LIGHTING APPLIANCES SOLD.

Fig. 1.

General Policy.

A general sales policy should be moulded on lines which will develop the personal touch, keeping in mind the limited resources the small undertaking usually has available. The headings requiring consideration are (1) advertising; (2) display; and (3) selling.

Advertising.—Constant paper advertising is usually too expensive for the small works, owing to the relatively small circulation among gas consumers, but occasional seasonal announcements should be considered. I suggest that a series of well worded typewritten copy letters addressed to the consumer personally, with suitably chosen literature enclosed, forms a very economical and successful way of maintaining contact with the consumer. Care should be taken not to distribute literature indiscriminately, but from the knowledge of the type of consumer, interesting matter should be sent along. We distribute our periodical letters by hand, and during meter readings leaflets are left.

Much of the manufacturers' literature has very little selling value, though if overprinted they are useful as price lists. But certain publications of the British Commercial Gas Association well repay the expenditure. During a recent extension of gas mains to the village of Clifton, I took particular notice of the reception of literature by the prospective consumers, I found that a publication of the B.C.G.A., entitled " Land of Magic Taps " was constantly being referred to and produced. I felt sure that although the cost was above the usual for general distribution, it had proved well worth the money spent.

A method of publicity which I have not hitherto seen described was tried on the extension of mains referred to above. The mains were laid alongside the Manchester-Glasgow road, which carries a great weight of night haulage traffic. We had fixed on the top of the night watchman's hut a large Sugg's lamp, the gas connection being made to the last length of main laid by means of flexible tubing. As the job moved on the main was re-tapped, and we found the advertisement freely commented on by both the villagers and the general night motorists.

Display.—A showroom is a *sine qua non* of any gas undertaking, but some small undertakings are more fortunate than others in the size and layout of premises. Elaborate showrooms cannot be run economically except by the larger undertakings; but, however small, if the showroom is stocked with clean representative display of seasonable appliances, it will make a good appeal. To those lacking adequate display accommodation I would commend the possibility of hiring window space, or co-operating in window displays with tradesmen in prominent positions.

Showroom display must be backed up by periodical demonstrations and exhibitions. These need not be too costly, but if properly organized they create in a small town quite an event, and leave a lasting impression. There are many ways of striking a novel note at the exhibitions, but above all I would suggest plenty of movement —*i.e.*, appliances connected up, working models, and demonstrations, all of which tend to promote an interesting exhibit.

Street and public lighting should be looked upon as a form of display and every opportunity taken to modernize the installation even at a cost to the gas. Bad street lighting reacts not only on the lighting load, but has also a detrimental effect upon the gas undertaking as a whole. Further, the character of a town is often judged by its attitude towards street lighting, and certainly in these times of night motoring a well lighted town is creating a good impression and advertising itself well.

Selling.—The underlying principle in considering the actual selling is to remember that it is to our advantage to get appliances fixed at the earliest possible moment, and thus reap the benefit of the gas consumption, and we should thus allow the greatest flexibility in the payment for appliances.

Every facility should be granted in fostering the ownership of appliances, because there is a greater security in a consumer who has purchased an appliance, than in one who is content to pay a nominal hire for something which may be used as a stand-by. The consumer takes a greater pride in her own property, and in this connection one cannot under-estimate the untold good that the modern "Regulo"-controlled all-enamelled cookers have done in creating this demand for possession.

In arranging payments there is the choice of simple hire, cash, hire purchase, and rebate. If a simple hire system is operated, the rates charged should be set to allow a gradual replacement of appliances.

In addition to the orthodox three or five years' hire-purchase system, I wonder whether we are fully alive to the possibilities in the monthly hire-purchase system as exploited by the furnishing and other branches of domestic business. There must be a vast number of gas consumers who are already allocating a fixed sum monthly in repayment for some goods, and in many cases it is the only way that people could ever purchase the goods. In this connection I may mention that we give the option of 12 monthly terms of 4s. each for gas boilers, and have sold in this manner a good number of boilers to consumers who might not have been able to lay out a larger sum.

Rebate Systems.

Considerable interest has been shown in the slot meter rebate system, and its importance cannot be over-emphasized. At the outset, I would say that had it not been for the operation of this system, our success in gas lighting sales would not have been achieved.

The main advantages accruing from the system are:

(1) Saving of changing meter dials or wheels.
(2) Changes of tenancy are reported immediately.
(3) The adaptability of instalment payments.
(4) A more friendly atmosphere is created on the collector's visit.

In actually adopting the system there are three courses open:

(1) The temporary setting back of a meter until the actual account has been paid.
(2) The permanent setting back and the retention of a fixed sum per quarter from the rebate.
(3) The permanent setting back and the retention of the whole of the rebate each quarter.

Small undertakings have to consider seriously what extra labour in book-keeping is involved in the system, and we decided on scheme (3) and find the system works remarkably well. Our meters are set permanently at 18 c.ft. equivalent to 4s. 7½d. per 1000 c.ft. and the rebate has been varied according to price reduction until we are now giving 5s. 9d. in the £1 discount, or a net price of 3s. 2½d. per 1000 c.ft. Each quarter the whole of the rebate is retained until the account is cleared off.

During the 15 months' operation of this scheme we have passed over 300 accounts through rebates system, amounting to a total of £362. Fully 70 p.ct. of these accounts would not have materialized but for the scheme.

Fig. 2 and Tables 2 and 3 give some particulars of the Penrith Undertaking.

Table 2.

Prices for gas. Ordinary consumers. Declared value, 500 B.Th.U.

—	Gross.	Discount.	Net per Therm.
	d.	P.Ct.	d.
Up to 250 therms per half year	6·8	5	6·46
250– 625 " " "	6·8	10	6·12
625–1250 " " "	6·8	12½	5·95
Over 1250 " " "	6·8	15	5·78

Prepayment Consumers.—Meters set to 18 c.ft. per 1d. (4s. 7½d. per 1000 c.ft.), *less* 5s. 9d. in £; net price 3s. 3½d. per 1000 c.ft., or 7·91d. per therm.

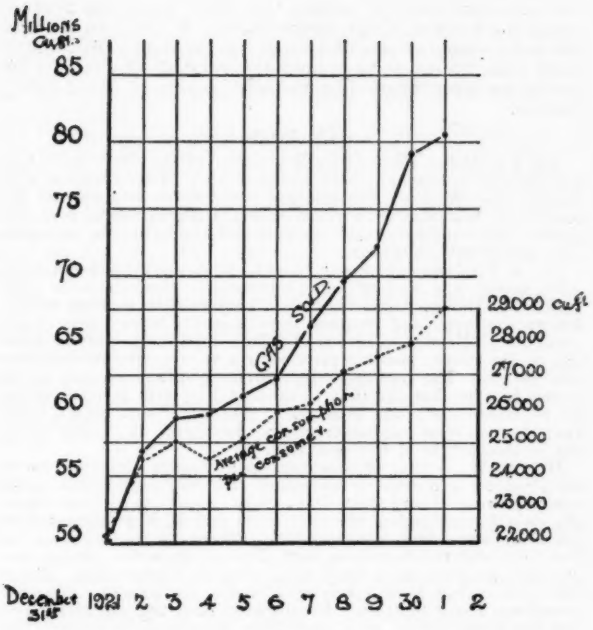


Fig. 2.

Street and Council Departmental Lighting.—5·78d. per therm.

Table 3 may be of some interest. It shows the allocation of work done in twelve months by the fitting staff, which consists of two senior gas fitters, two junior gas fitters, and one apprentice gas fitter.

Table 3.—*Year Ended March* 31, 1932.

Number of jobs recorded in daily job book			2669
Allocation.			
Mains and services—			
Renewals, watered, short supplies, &c.	172		
New services	64		
		236	
Meters—			
Changes, fixing new meters, &c.		304	
Repairing escapes—			
Meters, &c.	139		
Interior piping	149		
Cookers, fires, and other appliances	141		
		429	
Fixing, alter positions, &c, appliances—			
Cooking	196		
Heating	188		
Water heating	102		
Lighting	652		
		1138	
Maintenance (no charge)—			
Cleaning lighting appliances	238		
Cleaning cookers, fires, &c.	273		
		511	
Sundries		51	
			2669

In addition to the jobs recorded in the Daily Book, the following work has been carried out by the same staff during the twelve months under review:

1¾ miles of 4-in. spun piping laid.
1000 ordinary meters read quarterly.
2 Public Exhibitions fitted up and staffed.
Assisted in the canvass of a village supply.
Reconditioning of a number of hired cookers.

Conclusion.

If I might venture to sum up the formulation of a sales policy for the small undertaking I would say:

(1) Get the right outlook and appreciation of your responsibilities.
(2) Establish the goodwill of your consumers by showing you can be relied upon at all times.
(3) Maintain the interest of your consumer by keeping him constantly in touch with the latest developments in appliances, &c.
(4) Adapt your terms of payments for appliances to meet your consumers' circumstances, remembering that it is gas you are selling.

Finally, as no manager can ever hope to carry on alone, take your staffs, from office-boy to stokers, into your con-

fidence. Get them to realize that their livelihood depends upon the success of the undertaking. If you can do this, then the united efforts of a small but loyal and enthusiastic staff may do much to uphold the prestige of the Gas Industry as is represented by the often maligned small undertaking.

Discussion.

The PRESIDENT (Mr. J. R. Bradshaw, of the Hartlepool Gas and Water Company), who congratulated Mr. Corrigan, said that in the West of England gas was cheap, and one of the secrets of this was that there was a high gas sale per consumer. He would criticize the policy of rendering the accounts only half-yearly, however.

Mr. A. PICKERING, of South Shields, remarked that the author's sales policy was modern and progressive. Sometimes he (Mr. Pickering) thought that they were backward in making widely known the many and frequent improvements being made in gas appliances. He was in favour of selling appliances or hiring them out at the lowest possible price with a view to encouraging the sale of gas. The monthly hire purchase system seemed to be novel, but he thought that to make the system general might be to create disfavour with many consumers who might thihk that the gas man was never off the doorstep. He would adopt the method where it was desirable.

Mr. W. W. ATLEY, of Stockton, mentioned a plan introduced at Stockton a month or two ago. He had found that more cookers were being put back into stock than had been the case for a number of years past, and he had suggested to his Committee that consumers be offered to take cookers on free hire, and the figures he had obtained since the scheme was put into operation since April were certainly illuminating. About 330 cookers had been taken over under the scheme. Another point was street lighting. In Stockton both the electricity and the gas undertaking were under the municipal authority, but that did not lessen the competition between them. In the last month or two, he had taken over a further stretch of lighting in the main street and had put in 24 high candle-power lamps. The result of gas lighting had been so satisfactory that it had won the special commendation of the Lighting Committee's Chairman.

Mr. A. C. HOVEY, of London, said that Mr. Corrigan had adopted some of the principles used in other small districts. He had taken a personal interest in consumers, and had seen that they were satisfied. He had a good gas to sell, and was selling it at a low price—one of the lowest in the country, he believed, for works of that particular size. He remembered the case of a small gas-works in Scotland where over a period of years they had managed to reduce the price of the gas by 50 p.ct. They had left the slot-meter wheels unaltered, so that when the collection was made, the consumer received half his money back. In that small Scottish town the gas engineer was looked upon as a public benefactor by all the married women, for they received back their money while their husbands were at work. [Laughter.] In supplying apparatus free, the author had put up the price of gas. In that district people were careful in spending their money in these times, and they were satisfied, apparently, that they were getting good value for money under the system Mr. Corrigan had adopted.

Mr. H. LEES, of Hexham, on the question of rebates, observed that the problem was how far to go. People knew how many hours' lighting they got for their money from gas, but when there was competition from electricity they did not always take into account the rebate they got at the quarter's end. In one case he knew it had been decided to change the wheels of the slot meter and reduce the rebate, but whether that policy was right or wrong, remained to be seen. However, he thought there should be some comparison between the gas sold and the money put into the meter.

Mr. J. E. BLUNDELL, of Carlisle, said that undoubtedly Mr. Corrigan was on right lines in taking every opportunity possible to extend his field, because with the development of the grid scheme he would one day have electricity as a severe competitor.

Mr. A. F. YOUNG, of Cockermouth, said that they had never kept any fixed rule of simple hire for cookers. They had over 1700 meters at Cockermouth, and the population was around 5000. As to the re-payment system, they had put up the price of gas during the war to 4s. per 1000 c.ft., but now it was 3s. 2½d. at 450 B.Th.U., but they had not changed the wheels in the meters. It was a good policy not to reduce the money put into the meter, but to give it back in rebate.

Mr. G. W. MARTIN, of Houghton-le-Spring, remarked that his undertaking was similar in many respects to Mr. Corrigan's, and their rebate system with slot meters had proved successful for gas appliances and burners. They even allowed people to buy a mantle and pay for it out of rebate; and in this way something like £1341 had been collected.

THE AUTHOR'S REPLY.

Mr. CORRIGAN, replying to the discussion, said that, as to the practice of collecting the accounts half-yearly, it was an old custom of the town to settle half-yearly, and his Committee had not been prepared to change to the quarterly period. The meters were read quarterly and prepayments collected quarterly, but the accounts were only rendered half-yearly, and because this made for big accounts many people went in for slot meters. The monthly account system was optional. As to Mr. Lee's remarks as to a line of demarkation in the rebate system, 14 c.ft. per penny was as low a figure as he would like to go to. He would never suggest anything lower than that, for then people got the impression that the appliances were costing too much to run.

London and Southern District Junior Gas Association

The Annual General Business Meeting of the London and Southern District Junior Gas Association was held at the Westminster Technical Institute, Vincent Square, S.W. 1, on Friday, May 6—Mr. J. HOWARD GOLDSMITH, of the South Suburban Gas Company, the President, in the Chair.

The ASSISTANT HON. SECRETARY (Mr. G. Gardiner, of Wandsworth) read the minutes of the last meeting, which were duly confirmed; thereafter, on the proposition of Mr. H. G. Soar, seconded by Mr. G. Gardiner, the following were elected Scrutineers of the Council ballot: Mr. H. H. Brown (Southampton), Mr. H. C. Sims (South Metropolitan), and Mr. E. H. Hart (Romford).

The HON. TREASURER (Mr. H. G. Soar) then presented the financial statement for the past session, which showed a balance in hand of £166 6s. 4d.—or an increase of £11 odd on the previous session's figure. Mr. Soar remarked that this was the seventh occasion on which he had had the privilege of presenting the accounts as Hon. Treasurer. He then ran briefly through the various items in the balance-sheet.

The balance-sheet was unanimously adopted on the proposition of Mr. W. T. KENSHOLE (Lea Bridge), seconded by Mr. R. N. LEFEVRE (Gas Light and Coke Company), and the PRESIDENT thanked Mr. Soar for his work as Hon. Treasurer. He was, said Mr. Goldsmith, very keen in looking after the financial interests of the Association.

REVIEW OF THE SESSION'S WORK.

The PRESIDENT, in reviewing the session's work, said:

It is extremely gratifying to be able to report that our Association continues to grow in strength. Last year at this meeting, Mr. Prater reported that our membership was 401, and now I have to report a total membership of 421, not including our 15 patrons. The continuous flow of applications for membership is a matter of great satisfaction to your Council, together with an excellent financial position so ably administered by our worthy Hon. Treasurer.

This year we have to record the passing of one of our Past-Presidents—Mr. F. S. Larkin, who was a pillar of strength and respected by all who knew him.

The recommendation from this Association for the Institution of Gas Engineers Bronze Medal, for the best paper read by a member before a Junior Association for the year 1931, is the paper by Mr. E. W. Dunning on "Incomplete Combustion," and we are looking forward to the privilege of having this award again presented to a London Junior. Last year this medal was awarded to Mr. S. K. Hawthorne, of Birmingham, for his paper, "Oxide Purification," and I should like to congratulate the Midland Junior Association upon their success. This year we have the honour of a Silver Medal given by Mr. R. J. Milbourne, to be awarded annually on the decision of the Council to the member giving the best paper during the session. We very much appreciate this fine gift to our Association, and hope that it will be an added inducement to members to come forward with offers of papers. The presentation of the Milbourne Medal will be made at the opening meeting of our next session in October.

During this session we have been privileged to have papers read before us of a very high order, and I cannot attempt to enumerate any particular one, because they have all been of great interest and value. The attendances at our visits have also been very gratifying; at our visit to the British Industries Fair, Birmingham, last February, we numbered about 80. A joint visit such as this is of immense value to all of us, not only from the Exhibition point of view, but that it enables us to meet members of other Junior Associations, thereby keeping in touch with developments that otherwise would be lost to our knowledge. I particularly commend this visit for your continued full support, and I understand arrangements are being made for a similar visit next year. In connection with the British Industries Fair, I should like to mention that the general arrangements of the joint visit of the Junior Associations were in the hands of our esteemed Past-President, the late

Mr. F. S. Larkin, whose untimely death necessitated someone immediately taking over control. Our energetic Hon. Secretary at once volunteered to take over the duties and has agreed to continue to do so for the time being.

On March 16, 1932, the Midland Junior Association journeyed to London to visit Watson House, and I was privileged to have the opportunity of welcoming them on behalf of this Association. The Institution of Gas Engineers' Education Scheme calls for very little comment as far as our area is concerned. Mr. Prater as Secretary of the District Education Committee has dealt with a large number of inquiries from students, but nothing has arisen necessitating a meeting of this Committee. Our thanks are due to Mr. Prater for his untiring efforts on behalf of the Education Scheme.

It is our turn this year to provide a Secretary for the British Junior Gas Association Joint Council, and I am very pleased to be able to report that Mr. H. J. Risby has kindly consented to carry out this important duty.

In conclusion, I thank you for your support during the session, and would like to say how much I appreciate the excellent services rendered by the Officers and Council.

Mr. A. TENNANT (East Surrey Gas Company), Senior Vice-President, proposed, and Mr. G. S. GADSBY (Gas Light and Coke Company) seconded, the adoption of the President's report, which was unanimously agreed to.

A vote of thanks to the Officers and Council was carried on the proposition of Mr. A. BROADBENT (Gas Light and Coke Company), seconded by Mr. A. R. COWLISHAW (South Metropolitan), which Mr. F. C. SMITH (Gas Light and Coke Company) briefly acknowledged on their behalf, remarking that if they had given the members satisfaction that was all the thanks they wanted.

PRESENTATION TO PRESIDENT.

Mr. TENNANT said he had the most pleasing task of the evening in proposing that a suitable testimonial be presented to the President as a memento of his year of office. Although this was in accordance with precedent, he wanted Mr. Goldsmith to feel that it was no formal matter, but that the presentation they wished to make was a token of their respect and regard for him. Mr. Goldsmith had carried out the duties of President of the Association with distinction both to himself and to the Association, and he hoped that he would continue to give them his support. He therefore proposed that a suitable memento be given to Mr. Goldsmith—and this to take the form of any appropriate present that Mr. Goldsmith himself would choose.

Mr. SOAR seconded this proposition, which was unanimously agreed to.

The PRESIDENT, in reply, said that it was difficult to thank them adequately for this proposition. Like Mr. Smith, he might suggest that the work done this session was ample reward for anything he might have done on their behalf, and he was grateful to know that they were honouring him by a more tangible recognition, which he would cherish all his life. He assured them that he had no intention of dropping out of the Junior Association.

ELECTION OF OFFICERS AND COUNCIL FOR 1932-33.

The following Officers and Council were then elected for the session 1932-33:

President.—Mr. A. Tennant (East Surrey).
Senior Vice-President.—Mr. H. C. Sims (South Metropolitan).
Junior Vice-President.—Mr. F. C. Smith, F.C.S. (Gas Light and Coke Company).
Hon. Treasurer.—Mr. H. G. Soar (Gas Light and Coke Company).
Hon. Secretary.—Mr. F. H. G. Higton (East Surrey).
Assistant Hon. Secretary.—Mr. G. Gardiner (Wandsworth).
Hon. Auditor.—Mr. S. C. Waldock (Gas Light and Coke Company).
Council.—Messrs. G. Gardiner, J. M. Webber, P. F. Scarth, R. N. LeFevre, R. Summerson, S. H. Miles, H. J. Risby, and H. W. H. Butterfield.
Representatives on District Education Committee.—Messrs. T. H. Prater (Hon. Secretary), A. Tennant, F. H. G. Higton, and H. C. Sims.

A vote of thanks to the Scrutineers was carried on the proposition of the HON. SECRETARY, seconded by the ASSISTANT HON. SECRETARY, and the business of the meeting closed with a vote of thanks to the Technical Press, proposed by the PRESIDENT, and seconded by Mr. HIGTON, which was duly acknowledged.

Western Junior Gas Association

Visit to the Trowbridge Works of the British Gas Light Company, Ltd.

On April 23 the Association visited the Trowbridge Works of the British Gas Light Company, Ltd., and were welcomed on behalf of the Directors by Mr. A. E. Sainsbury, Engineer and Manager.

The works are conveniently situated near the town and cover an area of 2½ acres, with ample facilities at the rear of the site for extension. The carbonizing plant consists of five settings of horizontal through retorts, 16 ft. long, section 24 in. by 16 in., with six retorts to each setting. The retorts are charged and discharged by a Guest-Gibbons machine, which is replenished from an overhead coal hopper fed by a bucket elevator. The coke is discharged on to a push-plate conveyor and taken by inclined conveyor to a hopper in the yard. A Humphreys & Glasgow C.W.G. plant, erected in 1920, was converted in 1929 to the back-run process. The electrical generating plant consists of two generators direct coupled to Sissons vertical steam engines, the capacity of each set being 25 KW. at 220 volts at 600 r.p.m. A Holmes dry gas and naphthalene extraction plant of half-a-million c.ft. per day capacity is in operation.

Following the inspection the members adjourned to the Town Hall, where Mr. G. C. Gunston (Senior Vice-President) occupied the chair.

PRESIDENTIAL ADDRESS

of B. F. HARRIS, Trowbridge.

A few years ago, by demonstration to the local authority, we were able to convince them we could considerably improve the street lighting of the district, with the result that the main street through the town is lighted with lamps containing six No. 2 burners of 600 c.p.; important junctions with a similar lamp; points which may be termed of secondary importance are furnished with three No. 2 superheated burners of 270 c.p., while the two No. 1 burner lamps are used in all the side streets and residential neighbourhoods. At the commencement of this winter's lighting season we fitted the lamps along three roads with multi-ray reflectors. The optical effect of a triangle of light certainly does attract the public, and considerable interest was taken and favourable comments passed, which is one of the most important features of street lighting—*publicity* for the Industry.

I think we can claim to be very proud of our street lighting which we have successfully carried on for over 100 years. In common with other towns, we have to meet very keen electrical competition; but we are more than holding our own and gradually increasing. In 1924 the gas sold was 80 millions with just under 3000 consumers, and in 1931 the figures reached 104¼ with 4118 consumers.

NAPHTHALENE DEPOSITS.

For many years we have had considerable trouble with naphthalene and water deposits, and services were always the most troublesome. The prevailing idea among the fitters of the older school was that naphthalene deposits were caused either by very cold weather or very hot, because it was always found to be most prevalent under these conditions. I think myself they were always present, but were not felt to the same extent because of the difference in the load. From records which I have kept during the last five years the worst periods seemed to be June and July, which is the peak of the cooking load, and October and November, when the winter lighting and heating loads commence.

A few years ago we started a vaporizer on the outlet of the governor, but it is not possible to give any definite figures as to improvement or otherwise. After that an atomizer was fitted to the inlet of the gasholder. The process of atomizing was certainly making some difference

but by no means effecting a cure. The next idea took the form of oil filming the gas holder tanks, and this resulted in an increased number of complaints for about three months, after which they were reduced to what might be called the average for the time of year. What seemed to be happening was, we were freeing the works mains at the expense of the district. In July of last year we commenced working our naphthalene washing and "Dri-Gas" plant. The object in getting started at that time of the year was to endeavour to clear the system of naphthalene and water deposits before the autumn load. The following tables show what excellent results we have obtained:

Complaints of Poor Pressure per Annum.

Year.	Total.	Average per Month.	Number of Complaints per Month per 1000 Consumers.
1926	1976	164	48
1927	1518	126	35
1928	1699	141	36
1929	1976	164	40
1930	1794	149	37
1931	777	65	13

The year 1929 contains the extraordinary figure of 395 complaints in February, which was during the arctic spell in that winter.

Complaints of Poor Pressure—July to December.

Year.	Complaints.		Average per Month.		Average per 1000 Consumers.	
1926	1248	Average 1070	206	Average 177	60	Average 47
1927	916		152		43	
1928	1042		173		44	
1929	962		160		41	
1930	1183		197		50	
1931	317		52		12	

Percentage of Complaints Due to Naphthalene and Water Deposits.

1931.	P.Ct.	1932.	P.Ct.
August	92	January	17
September	100		
October	84	February	11
November	68		
December	53	March	2

Complaints of Poor Pressure.

1932.	Total for Month.	Average per 1000 Consumers.
January	23	5
February	18	4
March	17	4

While the foregoing figures show considerable improvement we have not yet attained our object. We have reduced the aggregate, but the complaints due to corrosion deposits rose from 5 in October to 20 in December. We anticipated something of this nature happening, so instructions were given that no service cleansers were to be used on services. We intended to resort to suction rather than blow deposits back into the main for a possible recurrence of the trouble. The effect of dehydration was very soon observed in all the mains and services, the moisture disappeared, and the accumulations of years comes from the services as a dry brown dust immediately the main cock is removed. The reason for removing the main cock is obvious, as we still have on the district a large number of maincocks which are not full bore. It has been very interesting observing the changes taking place and recording the incidents which have appeared outside the usual routine.

After the plant had been working about six weeks we were inundated with complaints of small leakages at maincocks which can be put down I think to capillary attraction—the moisture in the pipes bridging the plug and the wall of the cock. We have had two main fractures under water-bound roads, and in each instance evidence of the nearness to the actual break was apparent by the subsoil immediately over the fracture being perfectly dry and powdery. With one exception the whole of the cases of corrosion have occurred in services which are more than thirty years of age. The one comparatively recently laid service was put down about ten years ago, but is connected to a cast-iron main which is at least sixty years of age.

We have found, too, on many occasions when re-laying or repairing services, little heaps of corrosion lying in the main immediately beneath the service tapping, the result of a continual use of a service cleanser. Taking advantage of these observations, it has been our practice for a number of years to oil coat internally all mains when being laid and all service pipes immediately before connecting. It is possible at certain periods of the year for iron and steel to rust very rapidly unless previously treated, and an internal coating of oil or paint is advisable. If this is done at makers' works it is very important that a cleaning out of the pipes and renewal of the coating should be applied on the job unless one can be absolutely sure of the interior conditions. Fine dust has the habit of collecting under all sorts of circumstances and will undoubtedly have a deleterious effect on the valves of meters. During the summer of last year the Railway Company reconstructed one of the main road bridges carrying a 10 in. steel main, which gave us the opportunity of seeing the interior condition after ten years' service. The main was laid in 1921, and the walls are in excellent condition. There is not a sign of pitting by corrosion. Actually, we did recover about half a bucket of scaly rust and fine brown dust which very obviously came from a similar sized cast-iron main about 300 yards distant from the bridge.

Size of Services.

With regard to new services it is comparatively easy to estimate what the load is likely to be and make provision accordingly both with regard to the size of service and capacity of the meter. With existing services and meters the problem is a very difficult one. The consumer has the opportunity of obtaining appliances from many sources in addition to the local showrooms, and can get them installed without the knowledge of the gas undertaking. Very often the result is that the meter is considerably overloaded, and the appliance itself gives a wrong impression of the efficiency obtainable. It has been our practice to instruct fitters to report anything they may see of this nature when on consumers' premises, advise the necessary alterations, and, if possible, obtain the authority to carry them out while there. It is, of course, very apparent that such a method is only touching the fringe of the question, and a few weeks ago we commenced a serious survey of the whole district. The results of this survey have not yet been tabulated, but it is very clear that many small appliances of varying types are in use of which we were completely ignorant. The survey is being made as complete as possible, so that we shall be able to check the whole of our existing records.

THE PRESIDENT.

Mr. B. F. Harris, of Trowbridge.

Mr. Harris was educated at Trowbridge and Bradford-on-Avon Secondary Schools, and entered the service of the British Gas Light Company, Ltd., after leaving school, receiving his early training under the late Mr. R. H. Sainsbury, then the Engineer and Manager. Mr. Harris served with H.M. Forces during the war, with the R.G.A., in Belgium and France, and completed his Army service with the Army of Occupation in Germany, returning in 1919. He was awarded the Company's long service medal in 1925, and since 1924 has been in charge of the Town Office and Showroom, to which is attached the distribution staff and workshops.

The details recorded on the card are as follows:

Size of service and maincock.
Size of inlet and outlet of meter.
Number and date of meter; position and condition.
Particulars of appliances and condition; whether owned or hired.
Number of lights and details of burners.
Other appliances.

Under this heading come all gas processes used in various trades, &c. We have not quite completed the district, but have gained sufficient evidence to say definitely that the appliances generally installed without any reference to ourselves are geysers, gas coppers, and portable heaters, but very seldom cookers. This can be easily accounted for by reason of the encouragement that has been given to the consumer to obtain cooking appliances in various ways, by simple hire, hire purchase, or cash sales. A difficult problem which has to be faced is to decide what size meter to make the minimum; whether a 3 standard or high capacity of 80 or 100 c.ft., to allow of an overload being correctly registered in the event of additional appliances being fitted without the knowledge of the undertaking. Before the war, cookers, geysers, coppers, and fires were hired, but since 1920 only cookers and fires, both of which have been stardardized in a number of sizes, can be obtained in this way.

During the war it became necessary to increase the quarterly hire of appliances, and those consumers who wished were offered the appliances at a reasonable price, thus making it easy to purchase the appliance outright—an advantage of which a considerable number availed themselves. We find, too, especially in these days when so many people have to purchase the houses they occupy, an increasing tendency to own the gas cooker, and we are encouraging this desire on the part of our consumers by giving a discount for a cash purchase, or making terms for them over an extended period of three years. In point of fact, we do not draw the line at the cooker, but will make suitable terms for any appliance which will lead to increased business and satisfaction to both consumer and undertaking.

Domestic Hot Water.

Next to the cooking load, we must rank in importance that of the domestic hot water supply. At the moment, we have several types of excellent appliances, admirable in every way, but just a little outside the reach of the cottage homes which form the bulk in the majority of towns and cities throughout the country. The only gas water-heater they can at present really afford is the gas copper. The packed type makes quite a useful appliance for the supply of hot water for the cottage, for by heating up in the early morning ten gallons of hot water is available for use during the day. We find an increasing number of consumers are dismantling their old coal coppers instead of renewing the pans and replacing them with gas models to their considerable advantage in the saving of labour and space. We have had one or two instances of reconditioned cottages where the bathroom and the scullery have been adjacent, and, by appropriate connections, we have adapted the scullery copper to serve as a hot water supply to the bath simply by the turning of a cold water tap to eject the water previously heated. I do not suggest this idea as a common practice, but it certainly had the result of giving the consumers a means of getting hot water where no other ways were applicable.

We should spare no effort in our endeavours to obtain the cooking and domestic water heating of every residence in our various areas, both items being vital and essential to the well-being and health of our life, and, from the point of view of the Gas Industry, provide a steady everyday load irrespective of the season of the year.

Turning to what we may term our seasonal activities, lighting and heating, there are two or three points which are deserving of considerable attention. In the interesting battle for street lighting, our lighting engineers have demonstrated, in the keenest competition with electricity, that gas lighting is second to none, and, bearing in mind the fact that incandescent gas lighting is the nearest in colour to daylight, is there not here a glorious opportunity for us to do our very utmost to recapture the lighting of our shopping centres? The high efficiency of lamps, together with their low maintenance costs, should go a considerable way in convincing our business men who are much more concerned with saving expenses in these days than was the case a few years since. In addition to the improved lighting, with the aid of distant control and switch devices, we have excellent weapons to assist us, and it is my belief that we can, if we use more effort, regain the shop lighting or a considerable part.

Regarding large buildings which are centrally-heated, we are hearing quite a lot in these days of the downdraughts experienced and the lack of ventilation. Are we making the most of our chances in this sphere? The provision of gas lighting in large units in such buildings not only gives a very pleasing effect to the eyes but very materially assists in the ventilation and complete avoidance of down draughts. Here I think we have a good opportunity for closer co-operation with the engineers who are most concerned with central heating installations. My suggestion is that a central heating appliance should not be installed to do all that is required for heating the building, but should be supplemented by a number of self-contained units in the way of radiators or fires.

Vote of Thanks.

Mr. S. Hole, in proposing a hearty vote of thanks to Mr. Harris, said that the importance of modern methods in treatment of gas for the removal of naphthalene and water, thereby reducing two potential sources of irritation, with consequent better service to the consumer, was realized at Trowbridge.

Mr. A. Barrett seconded the proposition.

Annual Meeting.

After the minutes of the last annual meeting had been read and confirmed, the President announced that Mr. D. L. Copp (Exeter) had been elected by the Council as Junior Vice-President for the next session.

The following officers were re-elected:

Hon. Secretary.—Mr. W. M. Paterson, Bath.

Hon. Auditors.—Mr. F. J. Marlow (Weston-super-Mare) and Mr. H. W. Randall (Stroud).

Mr. K. L. Clark, Weston-super-Mare, was elected Hon. Treasurer following the resignation of Mr. E. Evans, Gloucester, who had been Hon. Treasurer since the inception of the Association.

It was unanimously agreed that a record be inserted in the minutes expressing the members' appreciation of the services rendered by Mr. Evans during his term of office.

The following new members of Council were elected by ballot:

Messrs. J. H. Dyde (Plymouth), S. B. Jones (Clevedon), and T. B. Armitage (Cheltenham).

The Hon. Secretary's and Hon. Treasurer's reports having been previously circulated, were taken as read and adopted.

The members were then entertained at tea through the courtesy of the Directors of the British Gas Light Company, and the thanks of the Association were expressed by Mr. Gunston. In reply, Mr. Sainsbury said that he would have great pleasure in conveying the thanks to his Directors, who, he knew, were keenly interested in the work of the Junior Associations.

NOTES ON PLANT AND PROCESSES

An Attractive Appliance Catalogue.

Pride of place in any kitchen must be given to the cooker; and in the pages of a new gas cooker catalogue of Messrs. Fletcher Russell & Co., Ltd., of Palatine Works, Warrington (Radiation, Ltd., Proprietors), there are examples of gas cooking appliances of modern design and construction.

As a frontispiece to this list is a very attractive colour plate showing the "Kingsway" cooker in the new "Beau" porcelain enamelled finish. This finish is a combination of dove grey porcelain enamel, with cream for the cast front frame, door panel, exterior sides, backplate, tray, and floorplate. The shelves of the plate-racks are chromium-plated, and this finish is also applied to the taps, "Regulo" control, and oven supply pipes.

The catalogue gives in a concise manner the special features of the "Kingsway" cooker, with particular attention to the "Regulo" oven heat control, single oven burner, and direct bottom flue outlet. The "disc-bar" hotplate is also described, the chief features of which include good heating efficiency, and a flat surface to ensure perfect stability for even the smallest cooking vessels. An interesting feature of this cooker is the "Vertico" taps, which avoid risk of the air adjustment being altered when the burners are taken out for cleaning. The oven is supplied with a safety tap which locks itself.

Various models of "Kingsway" cookers in a variety of finishes, and also different designs of hotplates, are illustrated in the catalogue, which subsequently describes larger cooking appliances for hotel or canteen use. A striking centre spread in colour shows a kitchen setting comprising the "Queensway" range—an apparatus incorporating all the basic Fletcher Russell principles. The "Era" gas cooker also receives attention.

Midland Association of Gas Engineers & Managers

SPRING MEETING IN BIRMINGHAM

The Spring General Meeting of the Association was held on Thursday, May 12, and was attended with great success, taking the form of an inspection of various phases of the work of the Birmingham Gas Department, whose Chief Engineer is Mr. E. B. Tomlinson, the President of the Association. Luncheon was provided at the kind invitation of the Gas Department.

Assembling in the morning at the Nechells Gas-Works, the members were welcomed by their President and by Mr. A. W. Smith, the General Manager, and a tour of inspection of these works, the Chemical Laboratories, and also the Saltley Works followed. Every provision was made for the comfort of the members; a large number of guides explicitly pointed out all the details of interest; while buses were provided to convey the visitors to different points in the itinerary and back to the city again in the evening.

The Works and Laboratories.

The Nechells Works cover an area of about 24½ acres, and are divided from Saltley Works by the L.M.S. Railway. They have a daily capacity of 20 million c.ft. of coal gas and 10 million c.ft. of carburetted water gas. The normal maximum consumption of coal is 1300 tons per day.

There are at work 120 retorts of Woodall-Duckham continuous vertical construction in four benches (each with a nominal throughput of seven tons) giving a daily output of 15 million c.ft. of gas. There are four producers at each end of each bench, and one waste-heat boiler per bench; each of which raises 7/8 thousand pounds of steam per hour at 120 lbs. per sq. in. pressure with 120° Fahr. superheat.

The water gas plant consists of six sets of Humphrey & Glasgow machines having a total nominal capacity of 13 million c.ft. of gas per day. (The normal capacity is 10 million c.ft. per day, thus keeping two generators in reserve.) Four of the sets are capable of producing 1,500,000 c.ft. each, and two sets recently installed are capable of producing 3,500,000 c.ft. each. These two sets are the latest type with revolving self-clinkering grates, and are worked entirely automatically.

Each of the five works of the Undertaking has its own Works Laboratory where routine testing is carried out to assist in the controlling of carbonization, water gas production, purification, &c. Chemical work which calls for special treatment is dealt with by experienced chemists at the central laboratories. The Central Laboratory is situated between the Nechells and Saltley Works and it comprises analytical, physical, and research laboratories, stores, and offices.

The coal test works has a daily capacity of 750,000 c.ft. of gas and only differs from an ordinary gas-works in that it gives extra facilities for refined measurements of gas, tar, liquor, coke, &c., and in addition, great prominence is given to sampling. The carbonizing plant comprises both horizontal and continuous vertical systems, in which tests for determining the value and suitability of coals are carried out. The test data form a basis on which the Works Engineers of the respective works judge their results.

The Saltley Works cover an area of 18 acres and are served by sidings from the L.M.S. Railway and basins from the Grand Union Canal. They have at present a daily capacity of 7 million c.ft. of coal gas, with a coal consumption of about 425 tons. Space is available for another plant of equal capacity. There is stacking accommodation for 40,000 tons of coal, this being handled by a 10-ton "Goliath" crane. There is also stacking accommodation for 4000 tons of coke. The carbonizing plant consists of one range of 56 Woodall-Duckham vertical retorts, each having a throughput of 8 tons per day. They are heated by ten independent step-grate producers arranged in two batteries. The waste-heat is utilized in three Babcock & Wilcox water tube boilers, each of which can raise over 10,000 lbs. of superheated steam per hour at 135 lbs. per sq. in. pressure. The gas leaves the retorts in four collecting mains, each main being governed by an "Askania" vacuum regulator. A cold air douche plant delivers air on the top of the retort bench to improve working conditions during hot weather.

There are 5 station meters, each capable of passing 100,000 c.ft. per hour, and one rotary meter with a capacity of 600,000 c.ft. per hour. One of the 100,000 c.ft. per hour meters is being converted to a "Bell" type of 300,000 c.ft. per hour capacity.

Luncheon.

Luncheon was served in the Devon Street Recreation Room, adjoining the Nechells Works, when Alderman J. H. Lloyd, M.A., J.P., Chairman of the Birmingham Gas Committee, presided, supported by the Lord Mayor of the City, Alderman J. B. Burman, J.P., Mr. J. H. Canning, President of the Institution of Gas Engineers, Mr. E. B. Tomlinson, and Mr. A. W. Smith, together with other members of the Gas Committee.

The Loyal Toast having been honoured at the call of the Chairman,

Mr. Hubert Pooley (Leicester) proposed "The City of Birmingham." The second city of our Empire, he said, has in the hearts of all Midland gas men a very warm place, no doubt because from a gas standpoint she is the capital of this large and busy area, but also and perhaps chiefly because of the many benefits the city through its own Gas Department confers upon every one so ungrudgingly and so freely. The work done for the Industry, year by year, at the British Industries Fair by the Department has been of infinite value to all. Birmingham owns all her public services, and each one of these activities sets an example which her lesser sister cities might well follow. It is interesting to note, he went on, that the private owner of a gas-works in Broad Street about the year 1819 sold his concern to the Birmingham Gas Light and Coke Company, for the sum of £25,000, and there was a second Company formed in 1825, which supplied other parts of the area. The city acquired the gas supply undertakings in 1875, the capital value being just over £2,000,000, the gas produced at that time being 1800 million c.ft. The output in Birmingham at the present time is only exceeded by that in the Metropolis. Turning to the energies of the Gas Department, he mentioned that the area supplied is 140 square miles and the length of mains about 1500 miles. There are now five works, with, in addition, a site for a new works at Washwood Heath. These works turn out about 15,000 million c.ft. of gas in a year, the capital debt at the present time being only £2,887,000. The maximum hourly output is not far short of 5 million c.ft. Nearly 300,000 consumers are served from the gas mains, and the coal carbonized in a year is approximately 900,000 tons. A hundred and thirty years ago the outside of Messrs. Boulton & Watts' works was illuminated with gas, and to-day the street lighting of the city by gas, near the Council House, is unrivalled by any other form of street illuminant throughout the country.

The City of Birmingham, as he had said, purchased the Undertaking in the year 1875, and the first Chairman of the City Gas Committee was the late Mr. Joseph Chamberlain. During recent years Alderman J. H. Lloyd and the late Alderman Sir Halliwell Rogers held the position of Chairman for about fifteen years each, much to the benefit of the city, the consumer, and the Gas Industry, the growth of the actual business in these times being colossal. One's mind turns to the great servants of the public who have held office under the Gas Committee, and of these, perhaps, the late Charles Hunt and Henry Hack would be best remembered. They were greatly favoured that day, he concluded, by the presence of the Lord Mayor at their gathering.

The Lord Mayor, replying to the toast, said that he liked to think that in Birmingham they had the best of everything. As he looked from one department to another he realized how remarkably well served Birmingham was, and there was no department by which she was better served than the Gas Department—which was their "first love." The activities of this Department extended well beyond the city and benefited many outlying areas. The Gas Department was only one of many others. It flourished side by side with an Electricity Department, and so long as there was this healthy rivalry between them they would be of benefit to the community at large.

"The Midland Association."

The toast of "The Midland Association of Gas Engineers and Managers" was in the capable hands of Alderman Lloyd, who remarked how glad the Gas Committee were to welcome them to Birmingham on that occasion. Nor was it the first time he had had the privilege of welcoming them, for he did so when they visited the city in 1918. Their Association, he said, covered a very wide area—from Gloucestershire to West Derbyshire and from Shropshire to Northamptonshire. He was very glad to welcome the President of the Institution of Gas Engineers, Mr. J. H. Canning, and it was very good of him to come to this function. The Midland Association, he said, was founded 55 years ago by five gas engineers who met in Birmingham to discuss the possibility of forming such a body. The late Charles Hunt was the first President, being at the time the Engineer of the Windsor Street Works. He went on to speak of the early days of the Association, and, in conclusion, said that he had great pleasure in coupling with the toast the name of their esteemed Engineer-in-Chief, Mr. Tomlinson. They valued him very much for his kindness, courtesy, tact, and the able way in which he helped them all.

The President, responding, thanked Alderman Lloyd for the delightful way in which he had proposed the toast of the Association. It had been proposed in just that kindly manner which he had expected, because they knew that Alderman Lloyd's whole life and interests had been spent in association

with the Gas Industry, not only in Birmingham, but throughout the whole of the Midlands; and they appreciated immensely the work which their Chairman did for the Industry. He went on to refer to the Freedom of the City which had been conferred upon Alderman Lloyd, and said that they were intensely delighted that he should receive this honour.

Mr. T. H. POULSON (Stafford) proposed a vote of thanks to the Chairman and members of the Birmingham Gas Committee for the privilege extended to the Association that day of visiting their works, and for their hospitality.

Mr. J. H. CANNING seconded the vote, at the same time thanking the President for the invitation extended to himself to be present, and also thanking the staff for showing them round the works. They were in the future going to see wonderful developments in the use of gas in industry, such as was carried out with marvellous success at Birmingham, and he felt that the future of gas lay to a great extent in this direction—provided the Industry was given legislative freedom to develop its potentialities. He was therefore very glad to see that Mr. E. W. Smith was one of the representatives on the Government Committee which was considering future gas legislation. He also congratulated Alderman Lloyd on the honour which had been conferred upon him, and he congratulated not only him but also the City of Birmingham. He was the ideal type of public man, and he had devoted time and energy unstintingly to the service of the public.

Alderman LLOYD briefly acknowledge the vote of thanks on behalf of the Gas Committee.

PRESENTATION TO MR. ARTHUR ROBERTS.

The PRESIDENT then made a presentation of a grandfather clock to Mr. Arthur Roberts, of Hereford, in recognition of his services to the Association in the capacity of Secretary and Treasurer—a position he has recently given up.

Mr. ROBERTS, in returning thanks for the presentation, said that he little realized when he took over the Secretaryship over three years ago that they would reward the little service he had rendered in such a magnificent way. All that he had done was a pleasure to him; and he would treasure this timepiece as a perpetual reminder of the pleasant three years he had as Secretary and Treasurer of the Association. He thanked them one and all.

Two new members were then unanimously elected to the Association—Mr. R. Crowther, of Rugeley, and Mr. Ely.

After lunch the members visited the Industrial Research Laboratories, Meter and Stove Shops, and the Heat Treatment Foundry.

The apparatus in the Gas Appliance Test Room includes a 20-c.ft. holder with wet meter, governor, and pressure gauge fitted to each bay. A Boys calorimeter is used to determine the C.V. of the gas during tests. One bay is fitted with trough and weighing machine for testing geysers, storage, and other water heaters. Another is fitted for testing gas cookers, while gas fires are tested for radiant efficiency and general performance on the apparatus on the inner wall. Various gas analysis apparatus, including two Vandaveer trains for the determination of carbon monoxide in air and flue gases, are on the table beneath the canopy.

The Leitz Metallograph and the Watson metallurgical microscope for photographs and visual examination up to 2000 diameters are installed in the inner room. In the small laboratory are fitted the multiple-stage polishing machine, oil-testing apparatus, bomb calorimeter, and carbon in steel apparatus. In the chemical laboratory two sets of corrosion tests were shown, with electrolytic and other apparatus.

A visit was then made to the meter and stove shops and stores adjoining the Windsor Street Gas-Works. The building, of fire-resisting construction, is 232 ft. long by 45 ft. wide, and consists of a basement loading deck, and ground and first floors, the total floor area being approximately 32,500 sq. ft. The building is heated by a low-pressure hot water installation which is designed to maintain a temperature of 55° Fahr. in the main building and 65° Fahr. in the offices. The ground floor is provided with eight loading bays which are 3 ft. 6 in. above the yard level, and each accommodates two vehicles; thus, a total of sixteen vans can be dealt with at one time. The deck being in the stores is of great advantage, as all goods for despatch can be assembled with speed and ease, the stores attendants having only a short distance to travel. The goods are placed in readiness for the carters overnight, and loaded next morning into the vans with the least possible delay. The deck floor is used for the storage of a certain number of cooking stoves—those in greatest demand—and in addition a section of it is occupied as a dry meter stores.

The first floor is used for the storage of gas fires and radiators, the goods being stored on specially constructed steel racks, most of which are 25 ft. long and 4 ft. wide. On these racks, it is possible to accommodate several thousands of fires, and wide gangways have been provided around each rack so that the stock is very accessible. Provision is made for the equipment of an appliance testing laboratory on the first floor above the main offices.

The figures for the year March, 1931, to March, 1932, showing the work done in the meter and stove shops respectively are of interest:

METER SHOPS.

Number of wet meters repaired, painted, and tested	3,483
,, ,, dry ,, ,, ,, ,,	23,424
Total of new meters received from makers	15,343
Number of meters issued	32,933

STOVE SHOPS AND STORES.

Number of cookers, fires, boilers, &c., repaired and renovated	18,767
Number of cookers, fires, boilers, &c , issued	49,865
Bags of fittings, iron pipe, &c., delivered to consumers' premises	54,477
Total of employees in meter shops, stove shops, and stores	16 clerical staff 175 workmen (including carters) and boys

The recently installed deep purifiers at the Windsor Street Works were also available for inspection.

At the conclusion of the visit tea was provided in the Windsor Street Messroom, when Mr. W. S. Morland (Gloucester) proposed a hearty vote of thanks to Mr. Tomlinson for all he had done for the members that day. This was seconded by Mr. Pooley and heartily accorded, the President briefly replying.

Midland Junior Gas Association

On May 5, Mr. W. L. S. SPINKS presided at the Annual Meeting of the Midland Junior Gas Association held in Birmingham.

On the motion of Mr. F. J. BENGOUGH (Birmingham), seconded by Mr. J. H. BUIGNAN (Kidderminster), the annual report and statement of accounts were approved.

Mr. F. A. C. Pykett (of the Coventry Gas Department), who is the Senior Vice-President, becomes the President for the ensuing year, and Mr. S. K. Hawthorne (Birmingham), the Junior Vice-President, now takes the senior position.

The CHAIRMAN announced that the Council had invited Mr. J. H. Wainwright, of Halesowen, to accept the position of Junior Vice-President.

Mr. C. E. Holt, Birmingham, and Mr. J. H. Wainwright retire from the Council, and to them a vote of thanks was passed. The names of Mr. F. L. Atkin (Birmingham) and Mr. E. L. Wallis (Dudley) were added to the Council to fill the vacancies.

On the motion of the CHAIRMAN, seconded by Mr. PYKETT, a vote of thanks was passed to the retiring officers, who were re-elected—namely: Mr. H. C. Wills (Hon. Secretary); Mr. F. A. Grant (Assistant Hon. Secretary); Mr. G. W. Smith (Hon. Treasurer), and Mr. W. P. Timbrell (Hon. Auditor).

The meeting expressed its warm acknowledgments, on the motion of Mr. WAINWRIGHT, seconded by Mr. MYHILL, to Messrs. H. R. Hems, W. Macnaughton, R. G. Marsh, and W. L. S. Spinks, members of the Midland District Education Committee, for their services during the year.

Mr. HEMS, replying to the vote of thanks, mentioned that the Committee had been able to give assistance to the B.C.G.A. The work of the Committee was, he said, of great interest, and he hoped it would prove of real value to the younger members in the Industry. He paid tribute to the work of Mr. W. J. Pickering, who represented the Junior Gas Associations on the Executive Committee of the General Education Committee. He was also actively interested in the work of the Joint Council of the Junior Gas Associations in education matters.

The four retiring members were re-elected.

GAS AND ITS POSSIBILITIES ON THE DISTRICT.

By S. W. SIMMONS, District Superintendent of the Dudley, Brierley Hill, and District Gas Company.

[EXTRACT.]

The presentation to gas consumers of representative examples of the best gas apparatus and fittings obtainable will, it is believed, provide convincing evidence of the marked advance that has been made in recent years in design, efficiency, and utility of all descriptions of gas appliances, both domestic and industrial.

Whether we like it or not, we are faced with the un-

doubted fact that we are losing a considerable portion of the lighting load to our electrical competitors, and to some extent we have only ourselves to blame. We cannot, however, close our eyes to the fact that the electricity industry in this matter has been spoon-fed by local authorities, and that business has come to their hands without the asking, and without any effort whatever on their part to secure it.

This is very largely due to the fact that electricity is receiving impetus from Governments and politicians of all parties. We see to-day working-class dwellings, erected through municipal housing schemes, where electricity is exclusively used for lighting purposes, utterly regardless of the fact that gas can be employed quite as successfully and with considerable economy.

When it is borne in mind that there are in these small council houses a number of rooms which can be adequately lighted by means of a " bijou " burner, which would give twelve hours' light for a penny, and that the remainder of the rooms in the house can be lighted equally well by a " universal " size burner giving five hours' light for a penny, it makes one wonder if those responsible for the illumination of these dwellings have ever taken the trouble to think of the cost of such services to their prospective tenants. The fact remains that electricity cannot give this service at the cost I have mentioned.

Our Lighting Load.

Are we wise in neglecting this lighting load? Have we stopped to consider what it means to the Gas Industry? If we review the history of the gas burner development, one fact stands out predominantly—that the development of gas lighting has not been due to those to whom it is customary to associate the profession of Gas Engineering. Practically the whole invention and research necessary have been carried out in independent workshops or laboratories. The other important fact which investigation shows is that no matters essential to the gas consumer of to-day are the monopoly of patents.

Many interesting and useful modifications of various kinds are so protected, but they are rather in the nature of finishing touches than master devices. One effect of this is that by certain manufacturing organizations much of the marketing of these essentials has passed into the hands of shoddy manufacturers, whose only interest in the article they make and sell is the profit it brings them. Instead of formulating certain standards to which the makers of burners, fittings, glassware, and mantles should be expected to conform, we allow the market to be flooded with cheap glassware, inefficient mantles, wasteful burners, and unsound fittings. Gas undertakings should thoroughly satisfy themselves that every appliance passing through their hands is of a kind to satisfy the requirements of the users.

A point which requires the serious attention of all engaged in the work of providing illumination by gas, especially the manufacturers of lighting units and those whose business it is to carry out illumination tests, is that the Gas Industry is greatly impoverished in the matter of data dealing with lighting characteristics, such as standardized reflectors, their efficiencies and applications. Why are we so far behind in this matter, while the electricity industry has made a special study of it? The answer can only be found in the fact that gas lighting, apart from any improvements that have taken place, has been a growth based on experience and traditional methods, rather than scientific and technical considerations, while in other directions of service the contrary conditions prevail.

Increasing Industrial Gas Sales.

There are three categories in any gas undertaking—viz., production, distribution, selling. Of these three I feel sure you will agree that the third is by no means the least important. It is the department which comes into close contact with the consumer. The first and second are solely of internal significance, their business being to deliver the goods.

To sell the goods has been no easy matter in the past, and we shall find it to be more competitive in the future, now we are in more open competition; and much of the success will be attendant on the abilities of the district representative to increase the gas sales side of the business. In ordinary industrial enterprises the greater commercial success comes when the demand can be kept in advance of the supply. In close competition the selling side creates the demand. In this way all plant and labour are kept fully occupied and worked to the highest efficiency. It has been stated by highly successful businesses that it costs more to sell than to make, and this is often the case in the Gas Industry. There is no doubt in my own mind that a great deal more should be done on the selling side.

A few of the larger undertakings, such as Birmingham, have tackled this question of industrial sales organization in an excellent manner, but it has to be recognized that it demands a very different type of man from the ordinary district representative. He must be a man well versed in the technique of the subject and its requirements. The smaller undertakings rely upon the goodwill of the larger undertakings for information and advice, and the larger undertakings are always anxious to impart the information required to the smaller undertakings for any particular needs.

Central Organization.

In my way of thinking what is urgently needed is for the whole of the country to be sub-divided into sections with a central organization to which undertakings in that particular area should pay a quota towards the expenses for the necessary administration; at each sub-section there would be a well-trained technical and commercial man who had specialized in the various sections of the industrial side of the Industry, and who would be assisted, according to the demand in any particular area, by additional industrial sales representatives.

The advantage of such sections would be that on request from an undertaking for assistance on industrial questions a representative would be sent to advise on any particular problems which present themselves, and so expedite the opportunity for securing business which is very often lost through lack of closer co-operation between the manufacturer and the undertaking.

In many industrial towns industrial gas consumption is the mainstay of the gas undertaking. In the main it is a day load. It is fairly constant in winter and summer. The cost per consumer for installation and service charges is less than for the domestic consumer, and this has been recognized by most undertakings through reduced charges. Has sufficient been done, however, to encourage this load? Is it not worth much more than is represented by the differences in gas charges that have usually ruled? On the other hand, if the industrial consumer can take large or small quantities of gas at will, the gas undertaking must always be in a position to deliver the maximum demand.

The present methods of gas charges in use throughout the country are inadequate and entirely unsuited to the present-day conditions, particularly in view of the fact that our competitive industry, electricity, has what may be called really scientific methods of charges.

Charges.

The subject of gas charges is one of the most important subjects for the Gas Industry as a whole to consider, in order to give a further incentive for increased gas consumption per service. Unfortunately, the Gas Industry is labouring under severe handicaps as the result of the conditions imposed on the Industry by legislature which, in the case of sliding-scale companies, absolutely precludes them from putting their houses in order in respect to gas charges.

You are all probably familiar with the methods of gas charging adopted in the United States of America and Canada, where no such hampering and restricted legislation exists. In these countries such public services are usually in the hands of syndicates or associated companies, with the advantage that these syndicates and associated companies can so frame their charges as to suit not only themselves as industrial concerns, but also to give to their consumers that service which is the most economical. I should like to touch upon what these methods of charges are in the countries referred to. In the first place, the flat-rate method of charging has gone completely, and its place has been taken by the three-part and the two-part tariff method of charging. The three-part tariff is brought about by dividing the charges to consumers under three headings—customer cost; demand cost; and commodity cost.

(1) *Customer cost* consists of the amount which each consumer costs the undertaking, whether he burns gas or not, such items of charges as book-keeping, billing, collecting, repairing meters, free services to consumers, rents, and other similar expenses which can be said to be constant to the consumers, regardless of the amount of gas such consumers may use.

(2) *Demand cost* consists of that portion of the undertaking's expenses in providing and maintaining production and distribution plant of a sufficient capacity to render the maximum amount of service required. This consists of taxes, interest, depreciation of plant, maintenance of property, &c. This demand charge is distributed among the consumers in proportion to the demand made upon the undertaking for such service.

(3) *Commodity cost* consists merely of items of labour and materials, the annual running expenses directly connected with the production of gas, which charges must of necessity vary with the amount of gas produced and the fluctuating conditions of cost of labour and materials.

With the two-part tariff, which appears to be more universal, the customer cost and the demand cost are put into one and termed as the customer cost, which is the average cost of supplying every consumer irrespective of the amount of gas he uses. The second part of the two-part tariff is

termed the commodity cost, which is the actual cost of making the gas.

Many methods have been employed from time to time by progressive gas engineers to promote the use of gas appliances. A system of differential charges described by Mr. G. Anderson in 1894 is of interest. Actuated by the idea that if gas was cheapened, more would be utilized, substantial reduction was announced for all gas consumed in excess of the quantity formerly used by each consumer. The increased sales led to an all-round reduction in price, and the method was applied by him with distinct success to some six undertakings.

It has often been the practice in many places to supply and fix appliances free under a guaranteed minimum consumption. Mr. D. Vass, in a paper he gave in 1913, said the requirements at Perth were 1000 c.ft. for each 10s. of the net cost of the appliance fixed, and the consumer was required to pay a surcharge of 1s. for each 1000 c.ft. that his consumption fell short of his guarantee. The profit upon the increased quantity of gas used, or the surcharge in default thereof, was calculated to ensure a return of 10 p.ct. on the capital outlay.

Mr. Thomas Hardie, Chief Engineer of the Gas Light and Coke Company, before the Western Junior Gas Association in February, 1928, said: In many directions the American gas selling practice resembles our own, but two and three part tariffs are common; indeed, the one price system has been made penal by the Supreme Court. The sliding-scale in this country has made it difficult to depart from flat-rate charges, and little has been done for the more profitable consumers beyond an increased discount. The need for the more just system of charging may have been somewhat hidden by steadily improving load factor.

The two-part tariff has been largely responsible for the use of gas for central heating becoming popular in America. Such an advantageous load deserves a very favourable price, and this can only be secured by a part-tariff system of charging.

What is required is the adoption of the principle of a system of scientific charging, and the substitution of the average selling price which would operate automatically in place of the standard price of a sliding-scale company, and the maximum price of a maximum-dividend company. For it is clear that so long as maximum and slide rates in Acts of Parliament and Provisional Orders by the Board of Trade are fixed upon the lighting rate charge, ignoring heating and industrial uses, the promotion of the use of gas in the heating and industrial fields will continue to be greatly limited.

Increased industrial sales of gas will be brought about only—

(1) By reducing the selling price of gas.
(2) By developing industrial appliances that are not only thermally more efficient, but which have a greater overall efficiency than industrial appliances using other fuels.
(3) By developing a well-trained and specialized selling side for industrial gas.

The responsibility for (1) rests with both the gas undertakings and plant manufacturers, the former by better organization and improved control of plant, and the latter by developing improved plants of lower capital cost per therm produced.

The application of town gas for central heating is a field which will undoubtedly lead to increased gas consumption if we will only use every effort to secure and maintain this load. Here is a potential field for the development of gas sales, and here again a field which would be considerably assisted if our methods of gas charges were amended.

Bath Gas Special Order

In December last an application by the Bath Gas Company for a Special Order under the Gas Undertakings Acts of 1920 and 1929 was the subject of an inquiry at the Board of Trade Offices in Westminster by Mr. J. F. Ronca (Director of Gas Administration).

The Order provides for the transfer of the undertakings of the Chippenham Gas Company and the Corsham Gas Company to the Bath Gas Company, by agreement, and for the further extension of the Bath Company's area of supply by the inclusion of a number of parishes which are not at present within the area of any gas undertaking. The Order also proposed the application of the basic price system to the Bath Company, which is at present a maximum dividend Company; and multiple basic prices as follows:

Bath inner area, 5·5d. per therm; Bath outer area, 6·2d. per therm; Keynsham, 7·2d. per therm; Colerne, 8·1d. per therm; Chippenham, 10·5d. per therm; and Corsham, 12·25d. per therm. At the time of the inquiry in December the Company and the Corporation had agreed on these basic prices, it being impressed upon the Director that the figure of 5·5d. per therm agreed for the Bath inner area was lower than it ought to be if that area were considered alone.

The question of the multiple basic prices was discussed at some length at the inquiry in December, but the Board of Trade has indicated to the parties that it objects to multiple prices, and insists upon one basic price being fixed for the whole of the area of the Bath Gas Company.

It was in these circumstances that a further inquiry was held at the Offices of the Board of Trade on Thursday, May 12, to discuss the fixing of one basic price for the whole undertaking. The Gas Company was represented by Mr. W. E. Tyldesley Jones, K.C., and Mr. H. R. Askew, as Counsel, while the Bath Corporation was represented by Mr. S. G. Turner, K.C.

At the opening of the proceedings, Mr. Tyldesley Jones referred to the fact that a provisional agreement had previously been made with the Bath Corporation for a series of basic prices, but the decision of the Board of Trade apparently nullified that.

Mr. Turner said the position was that the parties would now have to try to find a single basic price which would produce as nearly as possible the same result as would have been obtained had the multiple basic prices been permitted.

Mr. Tyldesley Jones said the position was that the Bath Corporation and the Gas Company had come to an agreement with regard to basic prices in the various districts, and presumably the agreement must go. If, however, the Corporation could induce Parliament to give effect to that agreement, he wished it to be clearly understood that the Bath Gas Company stood by that agreement. On the other hand, if the agreement went, the Bath Gas Company was not to be bound by the 5½d. basic price offered for the inner area of Bath in the agreement.

Mr. Turner agreed.

Mr. *A. W. White*, F.C.A., F.S.A.A. (Partner in Messrs. Cash, Stone, & Co., Chartered Accountants), then placed before the Director a table of figures indicating how he had arrived at the proposal of the Bath Gas Company that the one basic price to apply to the Company as a whole should be 6·54d. per therm. This was arrived at on the basis of taking the actual figures of costs for 1930 and making certain additions in view of the future and the new position created generally. For instance, he pointed out that he had added 9d. per ton to the cost of coal, because that was the figure now being paid under the quota system, and he saw no reason to anticipate that there would be any reduction of that in the near future. That additional 9d. per ton had been paid by the Company since June, 1930. In the matter of residuals, he had reduced the revenue from tar by ¾d. per gallon as compared with 1930 to bring it in accordance with the prices now being obtained, because the use of tar for road-making purposes was being seriously affected by competition from other materials. There was an additional charge of £600 for wages, as the 1930 figures were abnormally low due to the fact that the new retort house was in operation during the whole year.

For repairs of works an average of the actual figures for the past four years had been taken. They were extraordinarily low. In regard to profits on fittings, he pointed out that there is a tendency for the profit on the sale of fittings to be reduced. The Bath area, he added, is extremely well served by the Company, and there was not so much scope for development. Attention was also called to the allowance for a renewal fund of 1 p.ct. and a special purposes fund of 1 p.ct., an allowance for co-partnership, and an additional dividend of ½ p.ct. In regard to this latter, Mr. White explained that the Company had served the district extremely well for many years on the maximum dividend basis when there was no great inducement to do so having regard to the fact that the maximum dividend was assured. Nevertheless, the Company had progressed to such an extent that the price of gas in Bath for domestic purposes was lower than in any other place in the country, and therefore he contended that as an inducement to continue this policy in the future provision should be made, in fixing the basic price, for an additional dividend of ½ p.ct., which carried with it an allowance for consumers' benefit which amounted to £9087, as against £1500 for the shareholders and £1500 for the co-partners. In this way a basic price of 6·5d. per therm was arrived at, as the proposal of the Gas Company, as representing a fair figure to be applied to the whole area.

One of the principal reasons for promoting this Order, continued Mr. White, was that by taking over the Chippenham and Corsham Undertakings and extending the area into parts where gas is not now available, something would be done to give consumers in the outer areas a supply where none was now available, or a supply on more favourable terms in those districts now supplied; and for that initiative the Company was entitled to some remuneration, which was provided for by the proposed extra ½ p.ct. dividend.

Mr. Turner, in his cross-examination on behalf of the Corporation, immediately indicated that his proposal would be a basic price of 5½d. on the 1930 figures, or 5·69d. based on estimates he had made of the possible position at the end of ten years, but witness would not agree with that point of view.

Witness, answering various questions, strongly maintained the view that a basic price for the future must be based on an

estimate of what the future was likely to bring forth, and therefore something must be added to the 1930 costs in the circumstances in which we now find ourselves. Discussing with Counsel the proposed extra ½ p.ct. dividend, he said that the Company had managed its affairs so efficiently without any inducement for so many years that under a basic price principle there should be some inducement to it to improve its technical efficiency and so further reduce the price to the consumer.

In answer to Mr. TYLDESLEY JONES, in re-examination, witness pointed out that it was reasonable to look ahead for at least three years, and added that there is a revision clause in the Order which will allow the Company or the Corporation to apply to the Board of Trade should circumstances so change as to warrant a reduction or increase in the basic price.

Another point made by Mr. Turner in his cross-examination was that the figures adopted for repairs and works include amounts taken from revenue which ought to have been charged to capital.

Witness agreed that a small amount might so be regarded, but the repairs in the past few years had not been very large, and assuming, as he was informed, that the figures in question related only to repairs, then something ought to be added for renewals as well, and that was a reason for the renewals fund of 1 p.ct.

EVIDENCE OF MR. GEORGE EVETTS.

Mr. *George Evetts* was also called on behalf of the Gas Company, and said that the Bath Company had been selling gas at the lowest price in the United Kingdom to domestic consumers, and the efficiency of the management was demonstrated by the low capital cost per million—namely, £250—the high consumption per consumer, the low cost of carbonization of coal, and the general organization of the residual sales which represented a high percentage of the cost of coal. Moreover, manufacturing costs were extremely low, while capital charges per therm were almost the lowest in the country. As to the figures taken for repairs, there had not been a single gasholder repaired during the past four years, and for such repairs alone the renewals fund was justified.

Discussing the extra ½ p.ct. dividend, Mr. Evetts said that if ever there was a case in which a gas company was entitled to it, this was one. Normally, in asking for a sliding-scale the principle adopted was to take the total costs and add 2d. or even 3d. per 1000 c.ft., this often having been obtained, the immediate effect being to give a shareholder a bigger dividend on the sliding-scale than he would get with a maximum price company. Threepence per 1000 c.ft. was 0·6d. per therm, and the extra asked for by the Bath Company was 0·49d. per therm.

Giving some figures of consumption per head in the various parts of the Company's area, Mr. Evetts said that in the Bath city area it was 17,800 c.ft., in the Bath outside area 9330 c.ft., in Keynsham 11,100 c.ft., in Colerne 3960 c.ft., in Chippenham 6700 c.ft., and in Corsham 2370 c.ft. He added that 6·54d., as proposed by the Company, would be the lowest basic price in the country, the next figure being 7d. at Sheffield, which, however, had a big industrial consumption and was a large purchaser of coke oven gas.

This concluded the case for the Gas Company.

MR. ARTHUR VALON'S EVIDENCE.

Mr. *Arthur Valon*, for the Bath Corporation, handed in figures indicating that in his view a basic price, based on the costs for 1930, of 5·5d. was the right figure, while on the basis of certain estimates he had made for the position ten years ahead, the figure should not exceed 5·69d. per therm. The figure proposed by the Company of 6·64d. per therm was the equivalent of the difference of 1d. per therm between the basic price and the actual selling price, or £24,557.

Speaking of the addition proposed by the Company of 9d. per ton to the cost of coal, Mr. Valon said he was not prepared to prophesy about the possibilities with regard to the price of coal in the near future, but as regards tar, he knew from his association with the South-Eastern Tar Distillers that the price for road tar this year was better than in 1931, the price having been fixed at ½d. per gallon above the 1931 price. Commenting on the addition of £600 to the wages list as compared with 1931, he said he would not have expected the fact that some retorts were under repair to have made all that difference, especially as for the previous four years wages had steadily fallen.

Criticizing the figures for repairs of works and mains, Mr. Valon said that pre-war the average figure for this was 4½d. per 1000 c.ft., but the Company's basic price was based on a figure of 9·6d. per 1000 c.ft. The renewals fund and special purposes fund were intended to balance the expenditure of one year against another, and it did not necessarily follow that a definite proportion should be allocated each year. The fund was there to be drawn upon in bad years and made up in good years. The Company would not have received the ½ p.ct. extra dividend now asked for if the agreement with the Corporation as to multiple basic prices had gone through. At the same time, Mr. Valon said he must give the Company full credit for being well managed, and it had undoubtedly done its duty very fully with regard to reducing the price of gas.

Mr. TYLDESLEY JONES, in his cross-examination, drew attention to the suggestion in one of Mr. Valon's estimates that the consumption per head in some of the outlying districts would reach the high figure of 25,000 c.ft. in ten years, and expressed a doubt as to the possibility.

Mr. *Valon* said he certainly thought it was possible, because there were applications of gas which would in the near future become very large consumptions indeed. He agreed with Mr. Tyldesley Jones that the possible effect of the coal quota was likely to push the price up.

Mr. TYLDESLEY JONES, commenting on the remark that the price of tar is higher in 1932 than in 1931, said his instruction were that a lower price had been realized in Bath in 1932.

Mr. *Valon* reiterated the view that the general tendency of tar prices is likely to be up in the next few years.

Some discussion took place as to the suggested pre-war figure of 4½d. per 1000 c.ft. for works and mains, and by reference to the Field's Analysis for 1913, Mr. Valon said the average for the provincial companies for works and mains in that year was 4·82d. per 1000 c.ft., but that the figure for Bath in that year was 5·34d.

COUNSEL'S ADDRESSES.

Mr. TURNER, addressing the Director on behalf of the Corporation, said the appearance of the Corporation at this inquiry did not in any way indicate that it found itself more able to agree with the principle of a single basic price than it was able to on the last occasion. The view of the Corporation was that a figure of 6·34d. as proposed by the Company would be more favourable to the Company than the agreement made between the Company and the Corporation, and in the event of this figure being adopted the Corporation reserved the right to do whatever it might be advised to do hereafter, either on the question of principle or on the question of price. The agreement made with the Company was considered by both parties to be fair. Speaking of the figures adopted by the Company for repairs and works, Mr. Turner stressed the point that neither Mr. White nor Mr. Evetts had been able to give precise details of how much expenditure of a capital nature was included in that revenue item, and contended that an accurate figure should have been placed before the Director in order to justify the 1 p.ct. renewals fund. There might be information available to the Director which would enable him to make any necessary reduction in that item, and it would be for the Director to draw his own conclusions having studied both sets of figures provided by the two parties.

Mr. TYLDESLEY JONES, speaking on behalf of the Company, contended that it was necessary in arriving at a basic price to take account of the higher costs in the outer areas, but as a matter of fact that had not been done. Mr. Valon's estimate of 5·5d. was nothing more than an arithmetical calculation taking the 1930 output and the 1930 costs. He had made no allowance for what might happen after the amalgamation, nor for some obvious increases in costs which must be faced in the near future. On behalf of the Company he claimed that the figure of 6·54 had been reasonably substantiated, subject perhaps to some minor criticisms. It was not, he urged, an unreasonable thing for a gas company to spend something out of revenue on improving the undertaking, and so long as that amount did not assume abnormal or unreasonable limits it did not hurt the consumer. Indeed, in the present case the consumers of Bath were deriving considerable benefit from the policy which the Company had adopted in the past and which had resulted in the very low capital charges at the present time. Moreover, there was every reason to suppose, even with the saturation of the inner Bath area that had been mentiond, that even that part of the area would derive considerable benefit from the amalgamation. On the other hand, assuming that the inner area could not, by reason of the low price now charged, obtain any benefit from the amalgamation, surely it could not be argued that the amalgamation should not take place seeing that the outer areas would benefit very considerably.

The inquiry then closed.

Oakham Gas and Electricity Bill

The Bill promoted by the Oakham Gas and Electricity Company, Ltd., has been ordered by the Unopposed Bills Committee of the House of Commons to be reported for third reading. It provides for the increase of the Company's capital, and contains clauses relating to the raising of capital, dividends, &c., and the creation of special purposes and renewal funds. There is also a clause to enable the Company to sell the whole undertaking, or the electricity undertaking separately, with the approval of the Board of Trade and the Electricity Commissioners (see "JOURNAL" for Dec. 30, 1931, p. 840).

The Bill first came before the Committee on April 28.

Mr. N. S. PAIN (of Messrs. Rees & Freres, Parliamentary Agents) said that the limits for the supply of electricity were the same as those for gas, comprising the urban district of Oakham and a small area outside it. The Company had obtained a Provisional Order authorizing it to supply gas in 1888, the powers to supply electricity having been obtained by Act of Parliament in 1923. The total authorized share capital was £27,000, and there was power to borrow up to half the paid-up capital. At the moment the issued share capital amounted to just over £23,000, and the Company had borrowed £10,000. The total capital allocated to the gas undertaking was just over

£13,000, and the whole of the loan capital had been allocated to gas purposes. The amount of share capital allocated to electricity was just over £10,000.

Additional capital to the extent of £20,000 was asked for by the Bill, and would be required mostly for electricity purposes.

A report had been made on the Bill by the Minister of Transport, who assumed that the promoters would be required to justify borrowing powers to the extent of 75 p.ct. of the issued share capital, as asked for in the Bill. In this connection Mr. Pain handed in precedents for this power. He pointed out also that the Gas Undertakings Act of 1929 empowered the Board of Trade to grant borrowing powers up to 100 p.ct. of the paid-up share capital, and in electricity there were a considerable number of precedents for granting borrowing powers in excess of 50 p.ct.—in some cases up to 100 p.ct. As a rule, the clauses provided that 50 p.ct. could be borrowed at once, and the further 50 p.ct. with the consent of the Electricity Commissioners.

In reply to the CHAIRMAN (Capt. R. C. Bourne, Deputy-Chairman of Committees), Mr. PAIN said that in addition to the £10,000 already borrowed, there was a bank overdraft of £1680 at Dec. 31, 1931.

The CHAIRMAN asked why the Company asked for power to borrow, under the terms of the Bill, up to about £35,000, bearing in mind that the total amount borrowed, including the bank overdraft, was less than £12,000.

Mr. PAIN replied that there was some difficulty in raising ordinary capital, and the Company would be able to carry on with borrowed money; it was in the interests of the consumers generally that the Company should raise money as cheaply as possible. The Company had 10 p.ct. original capital and 7 p.ct. additional capital, and was asking for power to pay 8 p.ct. on new ordinary shares provided for by this Bill. The Board of Trade had no objection, in view of the difficulty of the Company in raising capital. It was a usual provision.

The report of the Minister of Transport also made reference to a clause in the Bill which sought to remove a limit (imposed by the Company's 1923 Act) to which the electricity profits might be applied to the provision of dividends on ordinary shares and stock; this removal would enable any excess profits —which would otherwise be applicable to the reduction of electricity charges—to be used for augmenting such dividends. Mr. Pain pointed out that the Company was a limited Company, and if it had not had gas powers, but was distributing electricity under an Order from the Electricity Commissioners, no provision would have been inserted in that Order to regulate the profits. Parliament had, since 1923, passed two gas and electricity Acts, in neither of which were any limitations placed on the amount of profits which could be paid on the electricity ordinary capital. A point to be borne in mind was that it was obviously of advantage that the Company should sell the electricity part of its undertaking, and it would be anomalous that the purchasing company should be subject to this limitation, whereas if it had applied to the Commissioners for a fresh Order it would not have suffered such a limitation.

The further consideration of the Bill was postponed until May 5, when amendments to a clause concerning the electricity undertaking were approved.

New Capital Issues.

Bognor Gas and Electricity Company.—As will be seen from our advertisement columns, Messrs. A. & W. Richards, of 37, Walbrook, E.C. 4, are offering for sale by tender, on behalf of the Directors of this Company, an issue of £25,000 of 5½ p.ct. redeemable debenture stock at a minimum price of issue of £102 10s. per £100 stock, yielding at that price (allowing for redemption) £5 5s. 4d. p.ct. Tenders for this issue must be received not later than 11 a.m. on Tuesday, May 24.

Lewes Gas Company.—Messrs. A. & W. Richards are offering for sale by tender £10,000 5 p.ct. perpetual debenture stock in this Company, the minimum price of issue being par. Tenders not later than May 31, 37, Walbrook, E.C. 4.

Lowestoft Water and Gas Company.—The tenders sent in for the £60,000 5 p.ct. perpetual debenture stock, which Messrs. A. & W. Richards offered on behalf of the Directors of this Company, were opened on May 11. They amounted to a total of £298,500 at prices ranging from £107 10s. down to the minimum of par. The lowest successful tender was at £103 2s. 6d. per £100, and the average price obtained for the whole issue was £103 13s. 1d. p.ct.

Mid-Southern District Utility Company.—The recent issue by this Company of £100,000 of 4 p.ct. consolidated preference stock, it is understood, was subscribed twice over, and allotments will be made from tenders ranging from 86 down to 77¼ in full, and those at 77 will be allotted at approximately 31½ p.ct. The average price of tenders submitted was 77⅞. The newspaper publicity of the prospectus was handled by Sells, Ltd., of 168, Fleet Street, E.C. 4.

South Shields Gas Company.—As will be seen from our advertisement columns, the Directors of this Company are offering for sale by tender £20,000 of ordinary stock at a minimum price of issue of £90 p.ct. The standard rate of dividend is 5 p.ct. per annum, and over the last eleven years the dividend has been £5 15s. p.ct. Applications for this issue are receivable up to 10 a.m. on Tuesday, May 31.

Mass Production of
STANTON
Standard "Special" Castings
BIG PRICE REDUCTIONS

IMMEDIATE DELIVERY FROM STOCK
The Stanton Ironworks Company Limited Nr. Nottingham

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

The further reduction in the Bank Rate last week to 2½ p.ct. was the signal for increased buying of gilt-edged stocks, and many large orders were placed. Victory Bonds touched par for the first time in their history, and prices generally in this section have advanced to such an extent that a yield of about 4 p.ct. is as much as can be obtained on the leading securities. The news of Mr. Lang's dismissal gave a much-needed stimulus to New South Wales stocks; while a strong upward movement also took place in the two Australian 5 p.cts. and in India securities.

The lead given by the gilt-edged group was reflected in the prices of Gas stocks and shares; and of the 109 issues in our Stock and Share List nearly one-third improved in value, the rises ranging from 1 to 6 points. A satisfactory feature was that these appreciations were by no means confined to preference and debenture stocks, for most of the leading ordinaries also improved. Judging from the large number of recorded transactions, it is evident that the current prices are tempting some to dispose of their holdings, but any stock coming into the market is speedily absorbed. It will be remembered that a short while ago the investing public appeared to be suffering from an electricity complex, and were under the delusion that "gas" as an investment had had its day, but Sir David Milne-Watson summed up the situation in his speech last week at the Annual General Meeting of the National Gas Council when he said that "the reputation of gas stocks as a safe investment was never higher." It is only necessary to refer to the large over-subscriptions to new issues and the prices obtained for proof of this.

Current Sales of Gas Products.

The London Market for Tar Products.

LONDON, *May* 17.

There is no change in the value of tar products, which remain as follows:

Pitch is firm at 95s. per ton f.o.b.

Creosote for export varies from 3¾d. to 5d. per gallon f.o.b., according to specification.

Refined tar is 4d. to 4¼d. per gallon in bulk at makers' works.

Pure toluole is about 2s. 7d. per gallon at makers' works; pure benzole, 1s. 8d. per gallon; 95/160 solvent naphtha, about 1s. 5d. per gallon; and pyridine bases, 3s. 9d. to 4s. per gallon.

Tar and Tar Products in the Provinces.

May 16.

The average prices of gas-works products during the week were: Gas-works tar, 35s. to 40s. Pitch—East Coast, 85s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 85s. f.o.b.* Toluole, naked North, 1s. 10d. to 1s. 10½d. Coal-tar crude naphtha, in bulk, North, 5d. to 5¼d. Solvent naphtha, naked, North, 1s. 2½d. to 1s. 3d. Heavy naphtha, North, 11d. to 11½d. Creosote, *ex* works, in bulk, North, liquid and salty, 3d. to 3½d.; low gravity, 1¼d.; Scotland, 3d. to 3½d. Heavy oils, in bulk, North, 5d. to 5½d. Carbolic acid, 60's, 1s. 8d. to 1s. 9d. Naphthalene, £9 to £10. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *May* 14.

While values in most departments are well maintained, business is confined mainly to refined tar and creosote oil.

Crude gas-works tar.—Actual value is 55s. to 60s. per ton, *ex* works.

Pitch.—Export price is nominal at 82s. 6d. to 87s. 6d. per ton f.o.b. Glasgow. In the home market, there is a good demand at 85s. to 90s. per ton *ex* works in bulk.

Refined tar to Ministry of Transport Specification continues in good demand, with value steady at 4¼d. to 4¾d. per gallon *ex* works naked.

Creosote oil.—Supplies are not too plentiful and values are steady. B.E.S.A. Specification is 3½d. to 3¾d. per gallon; low gravity 3¾d. to 4d. per gallon; and neutral oil, 3¾d. to 4d. per gallon—all f.o.r. in bulk.

Cresylic acid.—Business is slow and prices are irregular. Pale, 97/99 p.ct., is 1s. 1d. to 1s. 2d. per gallon; dark, 97/99 p.ct., 1s. to 1s. 1d. per gallon; and pale, 99/100 p.ct., 1s. 3d. to 1s. 4d. per gallon—all f.o.r. works.

Crude naphtha.—Production is being sold at 4½d. to 5d. per gallon, according to quality and district.

Solvent naphtha.—Orders are scarce. 90/160 grade is 1s. 2½d. to 1s. 3½d. per gallon, and 90/190 grade 11d. to 1s. per gallon.

Motor benzole.—Quotations are unchanged at 1s. 2d. to 1s. 3d. per gallon, but orders are not plentiful.

Pyridines.—90/160 grade is 3s. to 3s. 3d. per gallon, and 90/140 grade 3s. 3d. to 3s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s. d.		s. d.	
Crude benzole	0 7	to	0 7½	per gallon at works
Motor ,, ...	1 2	,,	1 3	,, ,, ,,
Pure ,, ...	1 6	,,	1 7	,, ,, ,,

Contracts Advertised To-Day.

Coal.

The Droitwich Gas Department invite tenders for the supply of coal. [Advert. on p. 406.]

The Gloucester Gas Light Company invite tenders for the supply of coal. [Advert. on p. 406.]

Tenders for the supply of coal are invited by the Gas Committee of the Penrith Urban District Council. [Advert. on p. 406.]

The Newbury Corporation invite tenders for the supply of gas coal. [Advert. on p. 406.]

The Rochdale Gas Department invite tenders for the supply of gas coal. [Advert. on p. 406.]

The Sittingbourne and Milton Urban District Council invite tenders for the supply of gas coal. [Advert. on p. 406.]

Gasholders.

The Borough of Darwen invite tenders for the re-sheeting of and renewals to a four-lift gasholder. [Advert. on p. 409.]

The Gas Committee of the Penrith Urban District Council invite tenders for the dismantling of a spiral-guided gasholder and the supply and erection of a new holder. [Advert. on p. 406.]

Gas Heater.

The Borough of Darwen invite tenders for a gas heater. [Advert. on p. 409.]

Condenser and Tar Extractor.

The Borough of Darwen invite tenders for the supply of the above apparatus. [Advert. on p. 409.]

Oxide of Iron.

Tenders are invited by the Rochdale Gas Department for the supply of new, and the purchase of spent, oxide. [Advert. on p. 406.]

Pipes.

The Rochdale Gas Department invite tenders for cast-iron pipes and specials. [Advert. on p. 406.]

Resetting of Retorts.

The Gas Committee of the Penrith Urban District Council invite tenders for the resetting of one bed of six retorts. [Advert. on p. 406.]

Tar.

The Gas Committee of the Penrith Urban District Council invite tenders for the purchase of surplus tar. [Advert. on p. 406.]

STOCK AND SHARE LIST.

Official Quotations on the London and Provincial Stock Exchanges.

[For Stock Market Report, see earlier pages.]

Issue	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. May 13.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
1,551,868	Stk.	Apl. 4	7⅞	7⅞	Alliance & Dublin Ord. ...	100—105	...	103½—103½
374,000	,,	Jan. 4	4	4	Do. 4 p.c. Deb. ...	70—75	...	...
557,655	,,	Mar. 14	7	7	Barnet Ord. 7 p.c.	127—132	+2	130—131½
300,000	1	Apl. 29	1/4½	1/9½	Bombay, Ltd.	15/—20/-*	...	17/-
177,750	10	Feb. 29	9	9	Bournemouth 5 p.c. ...	15—16	...	...
500,050	10	,,	7	7	Do. B 7 p.c. ...	12⅝—13⅞	...	13⅝—13⅝
439,160	10	,,	6	6	Do. Pref. 6 p.c. ...	11—12	...	...
50,000	Stk.	Dec. 14	3	3	Do. 3 p.c. Deb. ...	62—67	+4	...
162,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	83—88	+4	...
210,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	105—108	+2	106—106½
					Brighton, Hove, & Worthing			
337,900	,,	Mar. 14	7½	7½	6 p.c. Con. ...	122—127	+1	126—127
540,000	,,	,,	6¾	6¾	Do. 5 p.c. Con. ...	108—113	...	112½
195,500	,,	,,	6	6	Do. 6 p.c. B Pref.	114—119	+1	116—117½
1,287,500	,,	Feb. 29	5	5	Bristol 5 p.c. max.	97—99[a]	...	...
120,420	,,	Jan. 4	4	4	Do. 1st 4 p.c. Deb. ...	83—86[a]	+2½	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	83—86[a]	+2½	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	97—98[a]	...	...
855,000	,,	Apl. 4	7	8	British Ord.	112—117	...	116—117
100,000	,,	Jan. 4	7	7	Do. 7 p.c. Pref.	115—120	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	77—82	+2	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	98—103	...	...
160,000	,,	Jan. 4	5	5	Cambridge 5 p.c. Deb. ...	100—105	+5	...
100,000	10	Nov. 30	8	6	Cape Town, Ltd.	7½—8½	-•	...
100,000	10	Apl. 29	4½	4½	Do. 4½ p.c. Pref. ...	6—7	...	...
150,000	Stk.	Jan. 4	4½	4½	Do. 4½ p.c. Deb. ...	76—81	...	...
626,860	,,	Feb. 15	6	6	Cardiff Con. Ord.	93—96	...	...
237,860	,,	Jan. 4	2⅝	5	Do. 5 p.c. Red. Deb.	97—102	+2	...
157,150	,,	Feb. 15	5	5⅛	Chester 5 p.c. Ord.	87—92[b]	...	...
98,936	1	Oct. 5	†2/-	2/-	Colombo, Ltd. Ord.... ...	27/—32/-	...	...
24,500	1	,,	1/4½	1/4½	Do. 7 p.c. Pref.	17/—19/-	...	...
609,204	1	Apl. 4	-/10'90	-/11'47	Colonial Gas Assn. Ltd. Ord.	10/—15/-	...	...
296,053	1	,,	1/2'54	1/3'30	Do. 8 p.c. Pref.	10/—15/-	...	...
2,073,280	Stk.	Feb. 15	6	5⅝	Commercial Ord.	96—99	...	98—98½
475,000	,,	Dec. 14	3	3	Do. 3 p.c. Deb. ...	61—64	...	...
807,560	,,	Feb. 15	7	7	Croydon sliding scale ...	118—123	+3	118—122
469,590	,,	,,	5	5	Do. max. div.	82—87	...	...
500,000	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	100—105	+2	101½—104
543,270	,,	Feb. 29	7	10	Derby Con.	117—122[c]	...	...
55,000	,,	Jan. 4	4	4	Do. 4 p.c. Deb. ...	65—70[c]	...	...
209,000	,,	Mar. 14	5	5	East Hull Ord. 5 p.c. ...	75—80	...	...
179,500	,,	Feb. 29	5⅜	5⅜	East Surrey Ord. 5 p.c. ...	93—98	...	97⅛
155,019	,,	Jan. 4	5	5	Do. 5 p.c. Deb. ...	97—102	...	...
1,002,180	,,	Mar. 14	†4	†6½	European, Ltd.	90—100	...	90—93
19,405,992	,,	Feb. 15	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	20/3—21/3[f]	+·/3	20/4½—21/1½
3,600,000	,,	,,	3½	3½	Do. 3½ p.c. max. ...	64—68	+1½	66—68
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	82—86	+1	83½—85½
6,102,497	,,	Dec. 14	3	3	Do. 3 p.c. Con. Deb. ...	65—68	+1	66½—67½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	104—107	+1	...
2,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	98—101	+2	98⅜—99⅜
162,280	,,	Feb. 29	10	10	Harrogate Cons. 10 p.c. max.	157—162	...	...
82,500	,,	Mar. 14	7	7	Hastings & St. L. 5 p.c. Conv.	103—108	+6	...
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	82—87	...	...
70,000	10	9 Oct. '30	⅝	10	Hongkong & China, Ltd. ...	11—12	...	...
213,200	Stk.	Feb. 29	6	6	Hornsey Con. 3½ p.c. ...	87—90	...	...
5,600,000	,,	Oct. 30	25	15	Imperial Continental Cap.	162—172	−3½	162—170
233,130	,,	Feb. 1	3½	3½	Do. 3½ p.c. Red. Deb.	72—77	+2	...
235,242	,,	Mar. 14	8½	8½	Lea Bridge 5 p.c. Ord. ...	131—136	...	...
2,145,907	,,	Feb. 29	6	6	Liverpool 5 p.c. Ord. ...	104⅝—105⅝[b]	+2⅛	...
245,500	,,	—	—	5	Do. 5 p.c. Red. Pref. ...	97—102[b]	...	...
306,083	,,	Jan. 15	4	4	Do. 4 p.c. Deb. ...	85—90[b]	...	...
165,736	,,	Feb. 15	8	10	Maidstone 5 p.c. Cap. ...	124—129	...	...
56,176	,,	Jan. 4	3	3	Do. 3 p.c. Deb. ...	57—62	+2	...
75,000	5	Nov. 30	110	110	Malta & Mediterranean ...	6½—7	...	...
					Metropolitan (of Melbourne)			
892,000	—	Apl. 1	5½	5½	5½ p.c. Red. Deb.	77—82	...	...
171,978	Stk.	Feb. 29	5	5	M. S. D. Utility "C." Cons.	76—81	...	...
718,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	75—81	...	76—79
112,126	,,	£	4	4	Do. 4 p.c. Deb. ...	77—82	...	...
148,955	,,	£	5	5	Do. 5 p.c. Deb. ...	97—102	...	...
675,000	,,	May 21	16	16	Montevideo, Ltd.	60—70	...	...
2,061,315	,,	Feb. 29	5	5½	Newcastle & Gateshead Con.	18/9—19/9[d/]	+·/3	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	76—77[d]	+1	...
691,705	,,	Jan. 4	3½	3½	Do. 3½ p.c. Deb. ...	68—70[d]	...	...
277,285	,,	Oct. 30	5	5	Do. 5 p.c. Deb. '43...	99—101[d]	+4	...
199,940	,,	Mar. 14	7½	7½	North Middlesex 6 p.c. Con.	106—111	...	...
896,160	,,	Feb. 15	5	5	Northampton 5 p.c. max. ...	78—83	...	...
300,000	,,	Apl. 18	9	7	Oriental, Ltd.	85—95*	...	...
205,162	,,	Jan. 4	8	8	Plym'th & Stonehouse 5 p.c.	127—132	...	...
504,416	,,	Feb. 15	8	8	Portsm'th Con.Stk. 4 p.c.Std.	126—131	...	128—129⅝
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	78—83	...	77—78
114,000	,,	Feb. 15	5	5	Preston 5 p.c. Pref.	94—99	...	...
686,312	,,	Jan. 18	4	4	Primitiva 4 p.c. Rd. Db. 1911	77—82	...	80—80½
389,813	,,	Jan. 4	4	4	Do. 4 p.c. Cons. Deb.	77—82	...	80½
150,000	10	Apl. 4	6	6	San Paulo 6 p.c. Pref. ...	7—7½	...	...
1,736,968	Stk.	Apl. 4	6	6	Sheffield Cons.	101—103[e]	...	...
95,000	,,	Jan. 18	4	4	Do. 4 p.c. Deb. ...	79—81[e]	...	...
133,201	,,	Feb. 29	8½	5	Shrewsbury 5 p.c. Ord. ...	95—100	...	...
90,000	10	June 11	15	15	South African	3—5	...	...
6,709,895	Stk.	Feb. 15	5	7	South Met. Ord.	102—105	...	102¾—104¾
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	115—120	+1	119
1,895,445	,,	Jan. 4	3	3	Do. 3 p.c. Deb. ...	63—66	...	...
1,000,000	,,	Jan. 18	4	5	Do. 5 p.c. Red. Deb.	102—105	+1½	...
91,500	,,	Feb. 29	8½	8½	South Shields Con.	125—127[d]	...	...
1,548,795	,,	Feb. 15	6½	6	South Suburban Ord. 5 p.c.	102—107	...	105¼
300,000	,,	,,	5	5	Do. 5 p.c. Pref.	97—102	...	...
668,837	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	100—105	+1	102½—105½
647,740	,,	Feb. 29	5	5	Southampt'n Ord. 5 p.c. max.	75—80	...	...
121,275	,,	,,	4	4	Do. 4 p.c. Deb.	77—82	...	...
250,000	,,	Aug. 24	7	7	Swansea 7 p.c. Red. Pref. ...	98—102	...	...
200,000	,,	Jan. 4	6⅜	6⅜	Do. 6½ p.c. Red. Deb.	99—102	...	...
1,076,490	,,	Feb. 29	6⅜	6⅜	Tottenham and District Ord.	106—111	+2½	108—110
300,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	102—107	+2	105¼—106½
199,005	,,	Dec. 14	4	4	Do. 4 p.c. Deb. ...	77—82	...	...
85,701	,,	Apl. 4	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	70—75	...	...
					Uxbridge, Maidenhead, &			
346,069	,,	Feb. 29	7	7	Wycombe 5 p.c.	100—105	...	...
88,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	95—100	+5	...
					Wandsworth and District:			
1,322,220	,,	Feb. 29	7	7	Consolidated	117—122	+1	120—122
971,373	,,	,,	5	5	Do. 5 p.c. Pref.	97—102	...	101
1,167,964	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	102—105	...	104½—105½
158,400	,,	Feb. 29	5	6⅞	Winchester W.& G.5p.c.Con.	85—90	+2	...

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g* The interest due 1/1/32 was paid on that date. *h* Paid £3, including 10s. on account of back dividends. * Ex. div. † Paid free of income-tax. ‡ For year. § Div. =10 p.ct. p.a. less tax and less tax on interim dividend.

STOCK ISSUES.

By Order of the Directors.

THE LEWES GAS COMPANY.

Messrs. A. & W. RICHARDS

are Instructed to OFFER FOR SALE BY TENDER

£10,000

FIVE PER CENT. PERPETUAL DEBENTURE STOCK.

Minimum Price of Issue, Par.

Prospectus and Form of Tender (which latter must be sent in by 11 o'clock on Tuesday, the 31st of May) may be obtained of A. & W. RICHARDS, 37, WALBROOK, E.C. 4.

By Order of the Directors.

THE BOGNOR GAS AND ELECTRICITY COMPANY.

Messrs. A. & W. RICHARDS

are Instructed to OFFER FOR SALE BY TENDER

£25,000

5½ PER CENT. REDEEMABLE DEBENTURE STOCK.

Minimum Price of Issue, £102 10s. per £100.

Yielding at that Price (allowing for redemption at Par on the 31st of December, 1950), £5 5s. 4d. per cent.

Prospectus and Form of Tender (which latter must be sent in by 11 o'clock on Tuesday, the 24th of May) may be obtained of A. & W. RICHARDS, 37, WALBROOK, E.C. 4.

THE SOUTH SHIELDS GAS COMPANY.

SALE OF £20,000 ORDINARY STOCK.

THE Directors Offer for Sale by TENDER the above Stock, to be issued under the provisions of the South Shields Gas Acts, 1904 and 1919. Applications receivable up to 10 a.m. on Tuesday, the 31st of May, 1932.

The Standard Rate of Dividend is £5 per cent. per Annum; over the last eleven years the Dividend paid has been at the rate of £5 15s. per cent. per Annum.

Any amount of Stock, being not less than £10, or a multiple thereof, may be tendered for.

A deposit of £10 per cent. on the Nominal Amount of Stock applied for must accompany each Tender, and the balance of the purchase money must be paid on or before the 27th of June, 1932.

Minimum Price, £90 per cent.

The Stock will be registered in the name of the purchaser free of expense, and will rank for Dividend as from the 1st of July, 1932.

Copies of Prospectus, with Form of Tender and last Report and Accounts, will be sent on application to the undersigned.

A. PICKERING,
Secretary.

Gas Offices,
Chapter Row,
South Shields,
May 18, 1932.

ORDINARY and PREPAYMENT
Standard and High Capacity Sizes
COVERED BY STANDARD GUARANTEE

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GLOBE METER WORKS — OLDHAM
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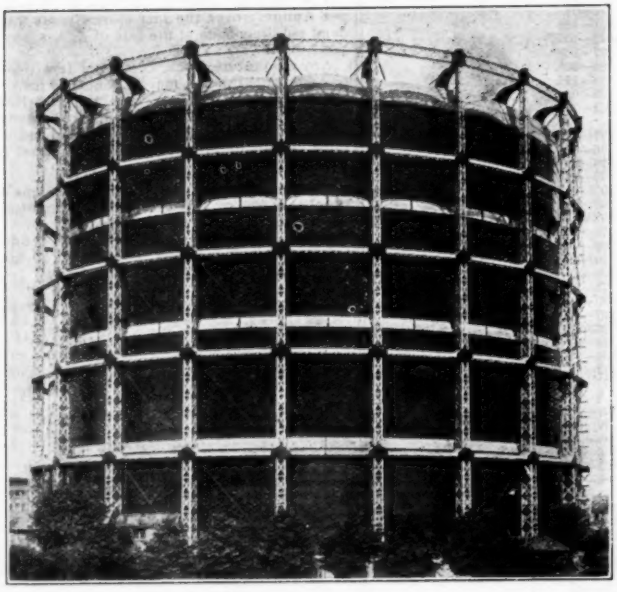

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NOON ON TUESDAY is the latest hour for receipt of advertisement copy for the following day's issue.

FIRST POST ON MONDAY is the latest for receipt of alterations of standing advertisements.

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FOR Motor Lorries and Railway Traffic can be seen erected at our Works READY FOR DELIVERY. Inspection by your Engineer invited and a test by your Local Inspector of Weights and Measures before delivery. Every machine a High-Class Engineering Product and fully guaranteed.

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'Phone: 8655 Coventry. Grams: "GASMETER."

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(See advertisement, April 27, p. 184.)

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GAS PURIFYING MATERIAL.

Immediate delivery from STOCKS at:—Grangemouth, Middlesbrough, Goole, London, Poole, Newport and Garston.

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London: Whitehall 6501.	Darwinian Parl, London.

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BALE & CHURCH, LTD.,
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BALE & CHURCH, LTD.,
33, ST. MARY-AT-HILL, LONDON, E.C. 3.
Phone: Royal 1484.

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Tins for Sale to Consumers.
In Bulk for Works Use.
(See "Gas Salesman.")

BALE & CHURCH, LTD.,
33, ST. MARY-AT-HILL, LONDON, E.C. 3.
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APPOINTMENTS, &c., VACANT.

COUNTY BOROUGH OF WALLASEY.
(GAS AND WATER DEPARTMENTS.)

APPOINTMENT OF CHIEF ASSISTANT GAS ENGINEER.

THE Eighty-Five Applicants for the above Post are THANKED herewith, and informed that THE APPOINTMENT HAS NOW BEEN MADE.

SPENNYMOOR AND TUDHOE GAS COMPANY.

APPLICANTS for the Post of Gas FITTER are hereby THANKED, and informed that THE POSITION IS NOW FILLED.
Spennymoor.

THE SITTINGBOURNE DISTRICT GAS COMPANY.

THE Directors invite Applications for Appointment as ENGINEER AND MANAGER.

Candidates must be fully qualified and thoroughly reliable (preferably accustomed to electrically driven Stoking and other Machinery, and C.W. Gas), with sound practical ability in up-to-date Manufacture, Distribution, &c., and Efficient Control of Men and Duties. (The appointed applicant will be required to fully devote his time and attention to the Company's business.)

Applications, endorsed "E. and M.," stating Age, Qualifications, present Position, Details of Experience, &c., and Salary suggested, with *copies* of three recent Testimonials, to be addressed to the undersigned and received not later than the 30th inst.

Canvassing will disqualify.

A. P. GHENT,
Secretary.

Gas Offices,
34, High Street,
Sittingbourne,
May 14, 1932.

(Continued on p. 406.)

ROBERT DEMPSTER & SONS, Ltd., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. Telegrams: "DEMPSTER, ELLAND." Telephone: ELLAND 261 (Private Branch Exchange).

FIRTH BLAKELEY, SONS, & CO., LTD.,

Vulcan Ironworks, Church Fenton, Yorks.,

MANUFACTURERS of Gasholders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.
Telegrams: "BLAKELEYS, CHURCH FENTON." Telephone: BARKSTON ASH 34 (Private Branch Exchange). Code: "BENTLEYS."

APPOINTMENTS, &c., VACANT.

(Continued.)

GAS Appliance Manufacturers require Services of CHEMIST as ASSISTANT in Laboratory.
State Age, Experience, and Salary required to No. 8222, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

PLANT &c., FOR SALE, & WANTED.

FOR SALE—200 Second-Hand Heavy CAST-IRON LAMP PILLARS, £1 each.
Apply to the GAS ENGINEER, PARKER LANE WORKS, BURNLEY.

FOR SALE—Two, good condition, Tangye Modern Type, Suction and Town's GAS ENGINES and SUCTION GAS GENERATORS approximately 38/42 H.P.; £80 each, but no reasonable Offer refused. Inspection invited.
Full details, UPFIELD & SONS, HASTINGS ENGINEERING WORKS, HASTINGS.

HAZEL GROVE AND BRAMHALL URBAN DISTRICT COUNCIL.

OWING to a scheme of conversion to electric lighting, the above-named Council have FOR SALE about 150 SQUARE COPPER GAS LANTERNS, quite suitable for Street Lighting Purposes, and are prepared to receive OFFERS for same. These lanterns may be inspected on application to the undersigned.
Offers, in writing, properly sealed, and endorsed "Street Lanterns," to be sent in to me not later than 5 p.m., July 19, 1932.

G. SEVERN DONCASTER,
Surveyor to the Council.

Council Offices,
Hazel Grove,
Near Stockport,
May 11, 1932.

FOR SALE—
ONE Waller ENGINE and four bladed EXHAUSTER, Capacity 60,000 c.ft. per hour against 40 in. pressure.
TWO Sturtevant BOOSTERS, Capacity 650,000 c.ft. per hour, coupled to DeLaval STEAM TURBINES 55 H.P.
ONE Two-Stage FAN, capacity 60,000 c.ft. per hour, driven by Lister Vertical Gas Engine 4½ B.H.P.
Apply to the ENGINEER, CROYDON GAS COMPANY, GAS-WORKS, PURLEY WAY, CROYDON.

WANTED. — Second-hand Station METER Rectangular Case, capacity 20,000 c.ft. per hour.
State Maker's Name, Age, Condition of Drum, and Size Connections to No. 8223, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

PATENT EXPLOITATION.

THE Proprietors of British Patent No. 300,145 are prepared to Sell the Patent or to Licence British Manufacturers to work thereunder. It relates to a Thermostatically Controlled Burner System for Gas Ranges or Ovens.
Address, BOULT, WADE, & TENNANT, 112, HATTON GARDEN, LONDON, E.C. 1.

CONTRACTS OPEN.

COUNTY BOROUGH OF ROCHDALE.

(GAS DEPARTMENT.)

THE Gas Committee of the Rochdale Corporation invite TENDERS for the Supply of such quantities of GAS COAL or NUTS as they may require during a period of Twelve Months ending 30th June, 1933.
Forms of Tender may be obtained on application to the Engineer and Manager, Gas-Works, Rochdale.
Tenders, suitably endorsed, and addressed to the Engineer and Manager, Gas-Works, Rochdale, must be delivered not later than noon on Saturday, the 28th May, 1932.

By Order,
WM. HENRY HICKSON,
Town Clerk.

Town Hall,
Rochdale,
May 10, 1932.

COUNTY BOROUGH OF ROCHDALE.

(GAS DEPARTMENT.)

TENDERS are invited for the Supply of CAST IRON MAIN PIPES and SPECIALS as may be required during a period of Twelve Months ending 30th June, 1933.
Forms of Tender and any further information may be obtained on application to the Engineer and Manager, Gas-Works, Rochdale.
Tenders, suitably endorsed, and addressed to the Engineer and Manager, Gas-Works, Rochdale, must be delivered not later than noon on Saturday, the 28th May, 1932.

By Order,
WM. HENRY HICKSON,
Town Clerk.

Town Hall,
Rochdale,
May 10, 1932.

COUNTY BOROUGH OF ROCHDALE.

(GAS DEPARTMENT.)

TENDERS are invited for the Supply of NEW OXIDE OF IRON and the PURCHASE OF SPENT OXIDE, f.o.r. Rochdale, during a period of Twelve Months ending 30th June, 1933.
Separate or combined Tenders for each class may be submitted.
Tenders, endorsed "Oxide," addressed to the Engineer and Manager, Gas-Works, Rochdale, must be delivered not later than noon on Saturday, the 28th May, 1932.

By Order,
WM. HENRY HICKSON,
Town Clerk.

Town Hall,
Rochdale,
May 10, 1932.

GLOUCESTER GAS LIGHT COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the above Company invite TENDERS for the supply of about 30,000 Tons of GAS COAL—Screened, Unscreened or Nuts—for the period ending the 31st July, 1933, in such monthly quantities as may be required by the Company.
Tenders to state the price delivered at the Gas Company's Siding, London Midland and Scottish Railway, Hempsted, near Gloucester, or, if sent by water, the price delivered into Carts at the Gas Company's Wharf on the Gloucester and Berkeley Canal.
Further particulars and Forms of Tender may be obtained from the undersigned.
Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of the Coal, to be addressed to the Chairman, Gas Offices, Eastgate Street, Gloucester, and delivered not later than Wednesday, the 8th day of June, 1932.
The Directors reserve to themselves the right to accept the whole or any portion of any quantity offered, and do not bind themselves to accept the lowest or any Tender.

By order,
T. BERNARD JAMES,
Secretary.

Gas Offices,
Eastgate Street,
Gloucester,
May 9, 1932.

PENRITH URBAN DISTRICT COUNCIL.

(GAS DEPARTMENT.)

THE Gas Committee of the above-named Council invite TENDERS for the following Contracts:

Contract No. 1.—The dismantling of a 2-Lift Spiral-Guided GASHOLDER, and the Supply and Erection within the existing tank of a NEW 3-LIFT SPIRAL GUIDED GASHOLDER of an approximate capacity of 270,000 c.ft.
Contract No. 2.—The RESETTING of One Bed of SIX RETORTS.

Copies of the General Conditions, Specifications, and Form of Tender may be obtained from the Gas Engineer, Mr. John Corrigan, M.Inst.Gas E., Gas-Works, Old London Road, Penrith, where particulars of the proposed work may be inspected.
Tenders are also invited for:—

Contract No. 3.—The supply of approximately 6000 Tons Washed GAS NUTS.
Contract No. 4.—The PURCHASE of SURPLUS CRUDE TAR, approximately 350 Tons from horizontal retorts.

Each required over the period of Twelve Months, ending June 30, 1933.
Forms of Tender may be obtained from the Gas Engineer.
Tenders to be addressed to the undersigned, Town Hall, Penrith, sealed and endorsed, "Gasholder," "Resetting," "Coal," or "Crude Tar," and received not later than Twelve noon on Monday, the 30th of May, 1932.
The Committee do not bind themselves to accept the lowest or any Tender.

GEORGE WAINWRIGHT,
Clerk to the Council.

Town Hall,
Penrith,
May 12, 1932.

SITTINGBOURNE AND MILTON URBAN DISTRICT COUNCIL.

(GAS DEPARTMENT.)

TENDERS are invited for the Supply, as required, of about 2000 Tons of GAS NUTS, to be delivered to Sittingbourne Railway Station or to the Council's Wharf, Milton Creek.
Forms of Tender may be obtained on application to the Engineer and Manager, Gas Offices, Milton, Sittingbourne.
Tenders, sealed and endorsed "Gas Coal," to be delivered to the undersigned before 16th June, 1932, at noon.
The Council do not bind themselves to accept the lowest or any Tender.

G. H. POTTER,
Clerk.

Town Hall,
Sittingbourne,
May 14, 1932.

NEWBURY CORPORATION.

(GAS UNDERTAKING.)

TENDERS FOR COAL.

TENDERS are invited by the Newbury Corporation for the Supply of 8000 Tons of GAS NUTS, suitable for use in Woodall-Duckham Vertical Retorts, delivered during the Twelve Months commencing the 1st of July next.
Forms of Tender can be obtained on application to Mr. L. J. Weaver, Gas Engineer, Gas-Works, Newbury.
Sealed Tenders, endorsed "Tenders for Gas Coal," must reach the undersigned not later than Twelve noon on Thursday, the 9th of June next.
The lowest or any Tender will not necessarily be accepted.

S. WIDDICOMBE,
Town Clerk.

Municipal Buildings,
Newbury,
May 14, 1932.

DROITWICH CORPORATION.

(GAS DEPARTMENT.)

TENDERS are invited for the Supply of 3500 Tons, or part, Best Quality Yorkshire or North Wales LARGE SCREENED GAS COAL, to be delivered at Droitwich, G.W.R., in such quantities as may be required between the 1st of July, 1932, and the 30th of June, 1933.
Sealed Tenders, endorsed "Tender for Gas Coal," addressed to the Town Clerk, Town Hall, Droitwich, to be delivered on or before Saturday, May 28, 1932.

C. C. SIDAWAY,
Engineer and Manager.

Gas-Works,
Droitwich.

(Continued on p. 409).

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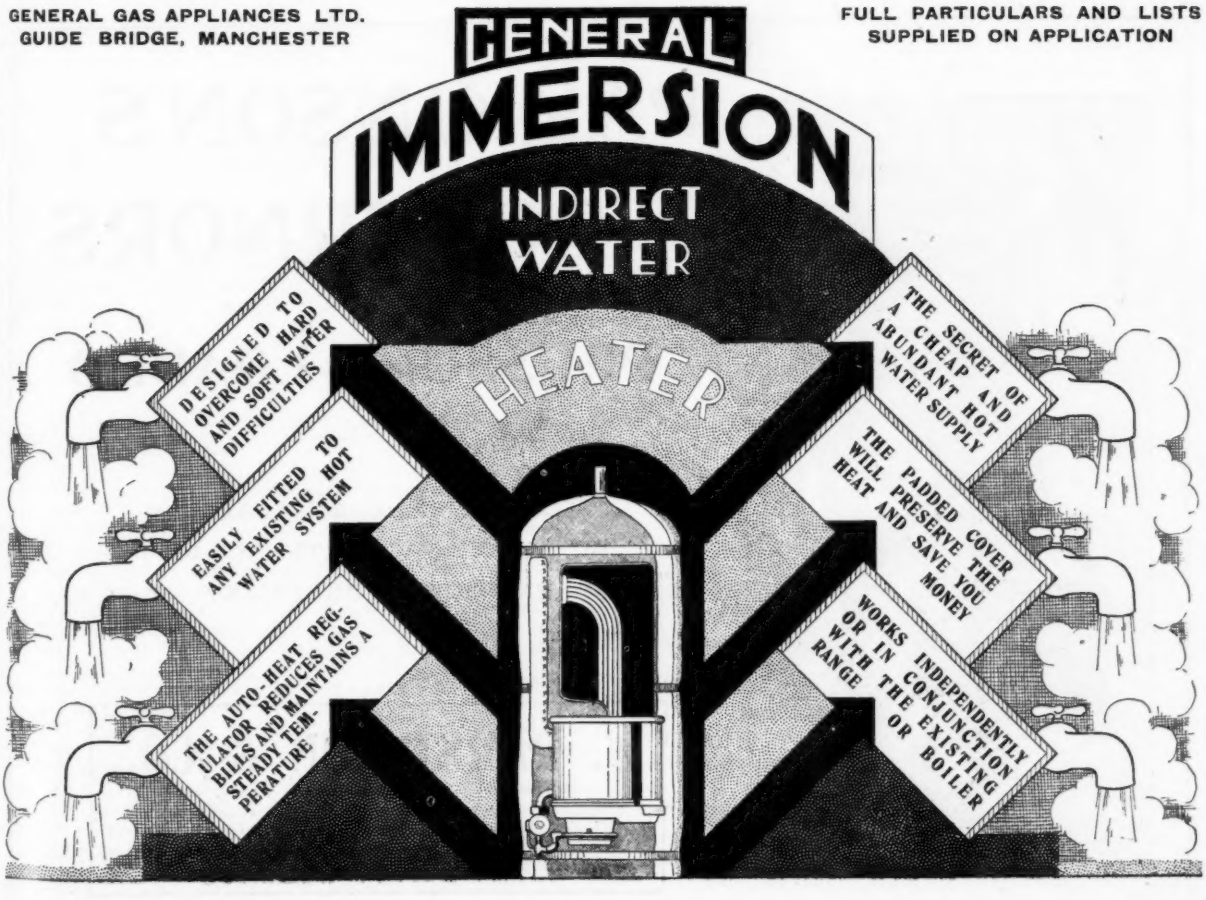
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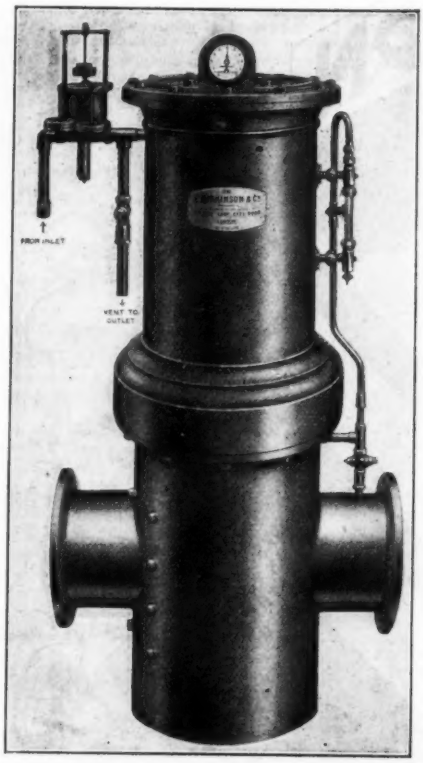

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